

DATE REPORT ACCEPTED 10-21-92
DISPOSITION SI
SAM SIGNATURE James P. Holmes

Preliminary Assessment

for

**Southern States Landfill, Incorporated
Atlanta, Fulton County, Georgia
GAD 984 288 191**

Prepared for

**U.S. Environmental Protection Agency
Region IV**

Prepared by

**Alexandra Y. Brooks
Georgia Environmental Protection Division**

September 30, 1992



10715676

PRELIMINARY ASSESSMENT

Southern States Landfill, Incorporated
(also known as Sanifill, Inc.)
Atlanta, Fulton County, Georgia

1.0 Introduction

Under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1986 (SARA), the US Environmental Protection Agency (EPA), Waste Management Division, Region IV has contracted with the Hazardous Waste Branch in Georgia's Environmental Protection Division (EPD) to conduct a Preliminary Assessment (PA) and Visual Site Inspection (VSI) at the Southern States Landfill site in Atlanta, Fulton County, Georgia. The purpose of the investigation was to collect information concerning conditions at the Southern States Landfill site sufficient to assess the threat posed to human health and the environment and to determine the need for additional investigation under CERCLA/SARA or other action. The scope of the investigation included review of available file information, a target survey and both off-site and on-site reconnaissance.

2.0 Site Description, Operational History and Waste Characteristics

2.1 Location

The Southern States Landfill site is located on the western edge of the Atlanta City and Fulton County limits on the banks of the Chattahoochee River (Ref. 2). The geographical coordinates are 33°49'30" N. latitude and 84°27'57" W. longitude (Ref. 1,2). It is bordered on the north by the Chattahoochee River, the southeast by Chambers Landfill, the west by Blue Circle Cement plant and on the east by a pair of CSX rail lines, sewage treatment plant, water treatment plant and other industrial facilities (refer to Figure 1). The total property area consists of approximately thirty nine (39) acres (Ref. 8,9). The mailing address is P. O. Box 94143, Atlanta, Georgia, 30337.

Fulton County has a humid and continental climate. The summers are warm but are comparatively free from oppressive heat, because of the altitude and latitude of the county. The average summer temperature is approximately 79°F. The average winter temperature is approximately 46°F. The annual rainfall is approximately forty nine (49) inches with the greatest precipitation occurring in March (Ref. 3,4).

3.2 Groundwater Targets

Southern States Landfill was constructed without an underlying liner to prevent the migration of hazardous substances out of the landfill. In early 1991, groundwater monitoring indicated the presence of chlorobenzene. However, Sanifill is presently required to perform annual groundwater monitoring. The latest groundwater analysis (first quarter, 1992) indicated contamination in the upgradient wells not the downgradient wells. The sedimentation pond indicated a concentration of carbon tetrachloride, however, this compound was also detected in the blank sample.

The nearest groundwater well is located at Sonoco, a industrial facility located on the east side of the CSX rail lines. However, these wells are used to obtain water for commercial uses rather than domestic use. A survey of wells indicate only five (5) domestic wells within the four (4) mile radius from the site and of which, all are located at a distance greater than one (1) mile from the site (Ref. 15).

The residences in the area acquire their drinking water from municipal drinking water systems which obtain the water from the Chattahoochee River (see surface water pathway). This is not a blended system.

3.3 Groundwater Conclusions

A release to groundwater is suspected, however, it is also possible contamination may be entering the site from another source. The nearest domestic groundwater well is located over a mile from the site. No primary targets for the groundwater release has been located. Therefore, the five wells are secondary targets. However, it is anticipated that the groundwater will impact the quality of the Chattahoochee River.

4.0 Surface Water Pathway

4.1 Hydrologic Setting

Surface water runoff from Southern States Landfill is channeled by the graded topography, piping, drainage swales and a sedimentation pond to the Chattahoochee River which is the northern boundary of the site (Ref. 6). The Chattahoochee River flows in a southwesterly direction from the site until it reaches the Alabama-Georgia border where it becomes West Point Lake. The Chattahoochee River exits the southern end of the lake at West Point Dam and travels southward to the Gulf (Ref. 5). At the time of reconnaissance, vegetation along the banks of the drainage pathway and river was healthy (Ref. 6).

2.2 Site Description

The Southern States Landfill site is located on the western edge of the Atlanta City and Fulton County limits on the banks of the Chattahoochee River (Ref. 2). It is bordered on the north by the Chattahoochee River, the southeast by Chambers Landfill, the west by Blue Circle Cement plant and on the east by a pair of CSX rail lines, sewage treatment plant, water treatment plant and other industrial facilities (refer to Figure 1). The total property area consists of approximately thirty nine (39) acres (Ref. 8,9). Primary land use in the area is heavily industrial and commercial use with limited residential use (Ref. 9).

2.3 Operational History and Waste Characteristics

Previous to 1984, the site was mined for clay. The time frame for the mining activities at this time is unknown. No other pre-landfilling use is known at this time.

Permit Number 060-010D was issued November 5, 1975 to Southern States Landfill, Inc. authorizing the operation of a sanitary landfill. The landfill was not developed until R. M. Cash and Sons, Inc. purchased the property in June, 1984. Landfilling operations began in October of 1984.

Since beginning operations, the landfill has accepted putrescible and nonputrescible commercial and residential solid waste. Regulated hazardous wastes were not accepted at the landfill. Any amount of hazardous substance should not be greater than that found in typical municipal sanitary landfills.

The site was owned and operated by Southern States Landfill, Inc. from its opening in 1984 until mid 1990, when it was sold to Sanifill, Inc., the present owner and operator. Waste was deposited in sequential manner beginning at the northeast corner near the railroad. Sometime after initial operations began, a construction and demolition waste section was added near the river at the northwestern corner of the site (Ref. 8,9).

3.0 Groundwater Pathway

3.1 Hydrogeological Setting

Fulton County is located entirely within the Atlanta Plateau which is a part of the Piedmont province. The landscape is a rolling surface characterized by moderate slopes but has no great relief. The valley of the Chattahoochee River which borders the site ranges from one hundred and fifty (150) feet to four hundred (400) feet and from two (2) to five (5) miles in width from rim to rim. The

3.1 Hydrogeological Setting (continued)

areas most dissected border the Chattahoochee and Little Rivers and have steep V-shaped valleys and sharp ridge tops with slopes ranging generally from twenty (20) to forty (40) percent. Level or nearly level flood plains occur along the Chattahoochee River (Ref. 4).

In the immediate area surrounding the facility, the soil is an association of Congaree, Chewacla and Wickham soils along the river bank and Madison and Louisa soils further inland. The Congaree, Chewacla and Wickham association occurs in irregular and comparatively narrow strips on first bottoms and terraces along the Chattahoochee River. The relief is mostly level or nearly level although some slopes are undulating. Drainage is moderately good to good along the Chattahoochee River. The natural fertility of the soils is moderate to high due to moderate organic matter content and are medium to strong acid. The Madison and Louisa association occupies the most dissected uplands along the Chattahoochee River. The underlying rock is principally mica schist that has high content of quartz in some areas. The soils are well drained to excessively drained. The natural fertility is generally low due to low to medium organic matter content and medium to high acid. All of these soils are fine sandy loam (Ref. 4). Soil permeabilities in the area range from 7.1×10^{-4} to 3.8×10^{-6} cm/sec (Ref. 9).

The site lies within the Brevard Fault Zone of the Piedmont Geologic Region. The Brevard Fault Zone is a distinct linear zone of shearing which is traceable from the Coastal Plain onlay of Alabama, northeastward through Georgia, South Carolina and most of North Carolina. In Georgia, the Brevard Fault Zone separates the Northern Piedmont from the Southern Piedmont. The rocks present in the Brevard Fault Zone include protomylonite, mylonite, blastomylonite, button schist and phyllonite (Ref. 4,9,10).

The Chattahoochee River basin is underlain by five aquifer systems. They are the Crystalline Rock aquifer system, the Cretaceous Sand aquifer system, the Clayton aquifer, the Claiborne aquifer and the Principal Artesian aquifer. Although most of the more prolific aquifers are confined and are relatively isolated from the surface water regime, some groundwater and surface water interaction exists in the basin. The aquifer associated with the northern end of the Chattahoochee River basin is the Crystalline Rock aquifer which consists of a complex of igneous and metamorphic rocks and ranges in thickness from less than ten (10) feet to possibly more than ten thousand (10,000) feet. The rocks have been complexly folded and fractured. Groundwater occurs in the fractures in the rocks as well as in the pore space in the overlying soil, which was derived from the weathering of underlying rocks (Ref. 4). Southern States Landfill is not located in a significant groundwater recharge area (Ref. 10).

4.1 Hydrologic Setting (continued)

The Chattahoochee River is classified only for fishing (not recreational, scenic or drinking water) for the fifteen (15) mile distance downstream of the site (Ref. 16). As the site is located on the banks of the Chattahoochee River, all elevations below 772 feet are within the 100 year flood plain (Ref. 17). The average flow of the Chattahoochee is 3,000 cfs with a typical minimum of approximately 1,000 cfs (Ref. 12).

4.2 Surface Water Targets

The Chattahoochee River is joined by other tributaries within the fifteen (15) mile surface water pathway (Ref. 2). The Chattahoochee River is classified only for fishing (not recreational, scenic or drinking water) on this section of the river (Ref. 16). The Chattahoochee River is also classified as a sensitive environment as it has been categorized for fishing under the Clean Water Act.

The ranges of endangered or threatened mammals, fish or amphibians do not occur along this section of the Chattahoochee. Nor are there any critical habitats for endangered or threatened species on the surface water pathway (Ref. 13).

There are no municipal surface water intakes located along the fifteen (15) mile of the Chattahoochee River downstream from the site (Ref. 5).

4.3 Surface Water Conclusions

There is no evidence of a release of contamination to surface waters although there is a well defined surface water runoff path. No evidence was present to suggest that contamination escaped the grounds and reached the surface water pathway at any time in the past. Further, there are no drinking water intakes along the fifteen (15) mile surface water pathway.

However, groundwater contamination may impact the Chattahoochee River which has therefore been classified as a primary fishery and sensitive environment. Testing of the Chattahoochee River just downstream of the sediment pond effluent may not be sufficient in demonstrating the lack of a release as the groundwater may be impacting the Chattahoochee River further downstream.

5.0 Soil and Air Pathways

5.1 Physical Conditions

The Southern States Landfill site is located in a urban part of Fulton County (Ref. 2). The closest residences are located at a distance of approximately a quarter (1/4) of a mile south of the facility (Ref. 6). The facility is currently active, employing eight (8) employees. Access to the facility is restricted by means of a continuous chain link fence (Ref. 6).

Southern States is presently an active municipal landfill. The estimated remaining life of the landfill is less than a year. Wastes are covered daily with clean fill and once closed, the site will be graded and seeded (Ref. 6).

The air emissions from Southern States Landfill were reviewed under the issuance of an Air Quality Permit for a flare. The flare controls the landfill gases which have been vacuum extracted from the landfill through a series of wells (Ref. 6,7).

5.2 Soil and Air Targets

An average population per square mile (approximately 1,300 person per square mile) indicates approximately sixty five thousand, two hundred (65,200) people reside within four (4) miles of the facility. The population located within one (1) mile is estimated at approximately four thousand (4,000) persons. The closest residences are located approximately a quarter (1/4) of a mile from the site. However, there are several industrial facilities located within one thousand (1,000) feet of the site. The land surrounding Southern States Landfill is commercial, industrial and residential (Ref. 6).

The ranges of two (2) endangered birds, Southern Bald Eagle (*Haliaeetus leucocephalus leucocephalus*) and the Red Cockaded Woodpecker (*Picoides borealis*) and one (1) endangered terrestrial mammal, Indiana bat (*Myotis sodalis*) (Ref. 13) include Fulton County as does two (2) species of unusual plants - Pink Ladyslipper (*Cypripedium acaule*) and Yellow ladyslipper (*Cypripedium calceolus* var. *pubescens*); two (2) threatened plants - Climbing Magnolia (*Schisandra glabra*) and False Hellebore (*Walsteinia lobata*); and (1) one endangered plant - Piedmont Barren Strawberries (*Veratrum woodii*). All of these plants are typically located in pine or hardwood forests. There are no critical habitats for these species within the study area (Ref. 14).

5.3 Soil Exposure and Air Pathway Conclusions

As the wastes at this site are typically covered on a daily basis with clean fill, the soil pathway is not of concern. The landfill gases are presently being controlled through the use of a vacuum extraction system and a flare under permit requirements of the Georgia Air Quality Branch. Therefore, the air pathway is not of concern. Therefore, no primary targets were identified.

6.0 Summary and Conclusions

The surface water pathway is of primary concern at Southern States Landfill due to the site's proximity to the Chattahoochee River. There is no evidence of surface water contamination by the surface water pathway although the pathway is well defined. Groundwater monitoring indicates the presence of contamination under the site but that the contamination could be migrating on-site from off-site. There is no indication that the Chattahoochee River has been contaminated by the groundwater from this site as the downgradient wells do not show contamination (other than carbon tetrachloride which has shown up in the blank also). However, the surface water pathway has been analyzed conservatively as the Chattahoochee River is classified as both a fishery and sensitive environment and the effect of groundwater contamination of the river may not have been identified yet. The air emissions have been reviewed under the permitting process to insure public safety. As the site is an active municipal landfill, any wastes are covered daily with clean fill which eliminates the potential surficial soil pathway.

Based on the results of this investigation, it is recommended that monitoring of the landfill continue until sufficient data has been generated to identify the source of the contamination (off-site or on-site) and whether it has impacted the Chattahoochee River. Unless groundwater monitoring indicates contamination has not impacted the Chattahoochee River, Southern States Landfill is recommended as a candidate for a Site Inspection (SI).

References

1. Topo-Aid, U.S. Pat. #4,271,596, G.R. Ganis, 1981, Instrument for the determination of latitude and longitude using U.S. Geological Survey Topographic Maps (7.5 and 15 minute series).
2. U.S. Geological Survey, 7.5 Minute Series Topographical Maps of Georgia; Northwest Atlanta Quadrangle 1973 and Mableton Quadrangle 1973
3. Weather Service, Climatological Data for Atlanta, Georgia
4. Soil Survey of Fulton County, Georgia, U.S. Department of Agriculture, Soil Conservation Service, December 1958
5. Water Availability and Use - Chattahoochee River Basin, Georgia Department of Natural Resources, Environmental Protection Division, 1984.
6. Site investigation of Southern States Landfill and surrounding area on September 1, 1992. State investigator, A. Brooks. Southern States Landfill contacts, R. James A. Leiper and Gerald Stelly
7. Georgia Air Protection Branch's Correspondence and Permit files on Southern States Landfill (see Appendix A for synopsis of files)
8. Georgia Land Protection Branch's file on Southern States Landfill (see Appendix A for synopsis of files)
9. Georgia Geologic Survey's file on Southern States Landfill (see Appendix A for synopsis of files)
10. Most Significant Groundwater Recharge Areas, Hydrologic Atlas 18, 1989, Georgia Geologic Survey, Scale 1:500,000
11. Computer Listing of Public Wells by County, WSGWA, DW.SOURCE.LIST., printed December 13, 1989
12. Water Resources Data, Georgia Water Year, 1990, U.S. Geological Survey, Water Data Report, GA-90-1
13. Georgia's Protected Wildlife, Georgia Department of Natural Resources, Game and Fish Division, September 15, 1977 with a supplement dated September, 1987

References (continued)

14. Georgia's Protected Plants, Georgia Department of Natural Resources, Endangered Plant Program, September 15, 1977 with a supplement dated September, 1987
15. Rob Allen, United States Geologic Survey, Water Resources Division, Georgia District
16. Rules and Regulations for Water Quality Control, Chapter 391-3-6 Revised, January 23, 1991
17. Cobb County Flood Plain insurance maps

Appendix A

Summary of EPD Files

Georgia Environmental Protection Division
Air Protection Branch Files
(not inclusive)

4/20/92 EPD letter accepting testing results

3/17/92* Issuance of Air Quality Permit for an enclosed flare, no visible
emissions and a minimum temperature of 1500 F

Georgia Environmental Protection Division
Geologic Survey Branch Files
(not inclusive)

4/29/92* Evaluation of Groundwater Quality at the Southern States/Sanifill
Sanitary Landfill, Bolton Road Site

4/2/92* Sanifill Response to EPD comments

12/11/91* Report of a Hydrogeological Study, Sanifill/Bolton Road Sanitary
Landfill

* Enclosed with report

Georgia Environmental Protection Division
Solid Waste Management Branch Files
Incinerator (not inclusive)

8/3/89	Relocation of Air Curtain Destructor (WCD) for destruction of wood wastes (trees, logs, large brush - not paper, etc.)
11/3/88	NOV, smoking ACD
3/11/87	Approval to raise ACD
2/26/87	2/16/87 Inspection/Trip Report - regarding the raising of the ACD
11/7/86	Solid Waste Handling Permit #060-067P(INC) approved
9/15/86	9/12/86 Inspection/Trip Report - sketch of landfill attached
7/18/86	Approval of alternative location for ACD
7/7/86	6/23/86 Inspection/Trip Report - regarding proposed ACD location
6/24/86	Receipt of application for ACD

Georgia Environmental Protection Division
Solid Waste Management Branch Files
Reclamation Operations (not inclusive)

10/25/90	Letter regarding 10/18/90 meeting to discuss complaints of solid waste being transferred and reclamation operations
10/17/90	Response to EPD letter regarding alleged solid waste handling violations
10/5/90	EPD letter regarding alleged solid waste handling violations during 10/3/90 inspection
3/9/90	Approval of design and operational (D&O) plan
6/16/89	Denial to allow coverage of recyclable solid waste versus removal daily
6/12/89	Approval of modification of D&O plan to include private vehicle unloading area
6/1/89	Request to allow coverage of recyclable solid waste versus removal daily
1/31/89	Approval of modification of D&O plan
7/5/88	Approval to modify facility by adding concrete slab working area
6/17/88	Request to add concrete slab working surface
1/15/88	Approval for modification
10/10/86	Approval of Permit No. 060-066P(RM) for solid waste handling operations
7/11/86	Request for additional information

Georgia Environmental Protection Division
Solid Waste Management Branch Files
Permit Files (not inclusive)

5/28/'92	Revised closure/post closure plans
5/20/'92*	Inspection of gas destruction system - inadequate
5/7/'92	Landfill gas extraction system in operation - 4/15/92
4/30/'92	EPD request review of groundwater monitoring plan by geologic survey
4/9/'92*	Landfill gas monitoring results - 100% LEL
3/27/'92	Landfill gas monitoring results - 100% LEL
3/17/'92	Landfill gas monitoring results - 100% LEL
3/17/'92	Air Quality Permit for incineration of landfill gases
9/3/'91	Landfill gas abatement plan
7/3/'91	EPD letter confirming 6/28/91 inspection (Sanitary Landfill Rating (SLR) = 86); estimated time left in landfill - 19 months; small leachate leak observed along north edge of landfill
6/28/'91	Letter from Chambers regarding Methane levels on common boundary with Southern States
6/14/'91	Response to 5/15/91 NOV
5/15/'91	NOV - wastewater from rinse station observed leaving site and flowing toward the Chattahoochee River (SLR for 5/9/91 inspection = 69 - inadequate)
5/9/'91	Inspection (SLR = 69 - inadequate)
10/5/'90	10/3/90 Inspection/Trip Report
10/2/'90	City of Atlanta letter to Raymond Cash advising of violation by shipping solid waste off-site from the reclamation area

Georgia Environmental Protection Division
Solid Waste Management Branch Files
Permit Files (not inclusive) (continued)

8/28/90	Odor complaint on 25, 27 and 28th
8/24/90	EPD approval to move scale and office
8/9/90	Odor complaint
8/9/90	8/9/90 Inspection (SLR = 90)
3/29/90	3/29/90 Inspection (SLR = 86)
3/5/90	EPD approval to provide truck and rail transfer facility
12/4/89	EPD agrees to methane testing/evaluation proposal
11/14/89	Inspection (SLR = 86)
9/11/89	NOV - unacceptable operation of ACD
8/30/89	Inspection (SLR = 94)
7/5/89	NOV - insufficient leachate control, daily cover and drainage violation
6/23/89	Inspection (SLR = 67 - inadequate)
5/5/89	Trip Report regarding ACD
4/28/89	Inspection (SLR = 88)
4/24/89	Letter advising recycling initiated on May 1, 1989
4/4/89	Inspection (SLR = 69 - inadequate); daily cover inadequate
2/9/89	NOV - daily cover
1/27/89	Inspection (SLR = 73)
10/27/88	Inspection (SLR = 86); ACD overcharged

Georgia Environmental Protection Division
Solid Waste Management Branch Files
Permit Files (not inclusive) (continued)


7/20/88	Inspection (SLR = 90); daily cover problem
7/15/88	Letter from City of Atlanta requiring Sanifill to remove asbestos disposed of
7/7/88	Letter from City of Atlanta regarding asbestos removal
5/5/88	EPD approved modified assessment monitoring plan
4/22/88	Inspection (SLR = 86)
1/12/88	Inspection (SLR = 92)
12/17/87	EPD approved site plan modification of change in fill configuration and fill sequence order
11/20/87*	EPD letter regarding groundwater monitoring wells adjacent to facility show consistently high levels of specific conductance and chlorides - 3 down gradient wells (1984 - 1987); average 800 microohms per cubic centimeter; request to develop assessment plan
10/28/87	Opacity test of ACD
10/20/87	Inspection
9/22/87	Inspection (SLR = 92)
8/21/87	EPD approved modification to D&O plan
8/15/87*	CO executed - regarding ACD
8/4/87	Odor complaint
7/20/87	Inspection (SLR = 69 - inadequate) ACD being constructed
7/10/87*	Consultant tested for methane at the site; no measurable methane found
6/5/87	Inspection (SLR = 0); open burning

Georgia Environmental Protection Division
Solid Waste Management Branch Files
Permit Files (not inclusive) (continued)

3/19/87	EPD approved plan modifications
2/27/87	Disposal of polyvinyl alcohol classified by EPD as non-hazardous
1/5/87	Inspection (SLR = 90)
11/12/86	Letter allowing the disposal of non-hazardous wastes from clean-up of Fina Oil warehouse
9/25/86	Inspection (SLR = 75)
6/27/86	Inspection regarding location of ACD
6/17/86	Complaint - uncovered truck
4/18/86	Inspection (SLR = 71)
3/25/86	Complaint - uncovered truck
12/11/85	Inspection (SLR = 94)
8/23/85	Inspection (SLR = 94)
5/31/85	Complaint - scavenging
4/17/85	Inspection (SLR = 96)
3/7/85	Inspection (SLR = 94)
2/15/85	Inspection (SLR = 75)

Appendix B

Preliminary Assessment Score Sheet

 Potential Hazardous Waste Site Preliminary Assessment Form	Identification	
	State: GEORGIA	CERCLIS Number: GAD984288191
	CERCLIS Discovery Date: 1/15/91	

1. General Site Information

Name: (AKA SANIFILL) SOUTHERN STATES LANDFILL, INC		Street Address: 13 COLLINS ROAD			
City: ATLANTA	State: GEORGIA	Zip Code: 30318	County: FULTON	Co. Code:	Cong. Dist:
Latitude: 33° 49' 30.0"	Longitude: 84° 27' 57.0"	Approximate Area of Site: 39 Acres		Status of Site: <input checked="" type="checkbox"/> Active <input type="checkbox"/> Not Specified <input type="checkbox"/> Inactive <input type="checkbox"/> NA (GW plume, etc.)	
				Square Ft	

2. Owner/Operator Information

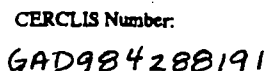
Owner: RAYMOND CASH, PRESIDENT		Operator: RANDY CHASTAIN	
Street Address: 4696 OAKDALE ROAD		Street Address: SANIFILL P.O. BOX 94143	
City: SMYRNA		City: ATLANTA	
State: GA	Zip Code: 30080	Telephone: (404) 435-9962	State: GA
		Zip Code: 30337	Telephone: (404) 799-1273
Type of Ownership: <input checked="" type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> Federal Agency <input type="checkbox"/> Municipal Name _____ <input type="checkbox"/> State <input type="checkbox"/> Not Specified <input type="checkbox"/> Indian <input type="checkbox"/> Other _____		How Initially Identified: <input type="checkbox"/> Citizen Complaint <input type="checkbox"/> Federal Program <input type="checkbox"/> PA Petition <input type="checkbox"/> Incidental <input type="checkbox"/> State/Local Program <input checked="" type="checkbox"/> Not Specified <input type="checkbox"/> RCRA/CERCLA Notification <input type="checkbox"/> Other _____	

3. Site Evaluator Information

Name of Evaluator: ALEXANDRA Y. BROOKS	Agency/Organization: GA EPD HAZ. WASTE	Date Prepared: SEPTEMBER 30, 1992
Street Address: 205 BUTLER STREET, SE		City: ATLANTA
		State: GEORGIA
Name of EPA or State Agency Contact: ALEXANDRA Y. BROOKS, GA EPD		Street Address: 205 BUTLER STREET, SE
City: ATLANTA		State: GA
		Telephone: (404) 656-7802

4. Site Disposition (for EPA use only)

Emergency Response/Removal Assessment Recommendation: <input type="checkbox"/> Yes <input type="checkbox"/> No Date: _____	CERCLIS Recommendation: <input type="checkbox"/> Higher Priority SI <input type="checkbox"/> Lower Priority SI <input type="checkbox"/> NFRAP <input type="checkbox"/> RCRA <input type="checkbox"/> Other _____ Date: _____	Signature: Name (typed): Position:
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☒ Solid ☒ Sludge ☐ Powder
☐ Liquid ☐ Gas

* C = Constituent, W = Wastestream, V = Volume, A = Area



Potential Hazardous Waste Site
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

GAD984288191

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:

☒ Yes
☐ No

Type of Drinking Water Wells Within 4 Miles (check all that apply):

☐ Municipal
☒ Private
☐ None

Is There a Suspected Release to Ground Water:

☒ Yes
☐ No

Have Primary Target Drinking Water Wells Been Identified:

☒ Yes
☐ No

If Yes, Enter Primary Target Population:

0 People

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - 1/4 Mile	<u>0</u>
> 1/4 - 1/2 Mile	<u>0</u>
> 1/2 - 1 Mile	<u>0</u>
> 1 - 2 Miles	<u>2</u>
> 2 - 3 Miles	<u>2</u>
> 3 - 4 Miles	<u>1</u>
Total Within 4 Miles	<u>5</u>

Depth to Shallowest Aquifer:

15 Feet

Karst Terrain/Aquifer Present:

☒ Yes
☐ No

Nearest Designated Wellhead Protection Area:

☐ Underlies Site
☐ > 0 - 4 Miles
☒ None Within 4 Miles

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):

☐ Stream ☒ River ☐ Pond ☐ Lake
☐ Bay ☐ Ocean ☐ Other _____

Shortest Overland Distance From Any Source to Surface Water:

≤ 100 Feet

_____ Miles

Is There a Suspected Release to Surface Water:

☒ Yes
☐ No

Site is Located in:

☐ Annual - 10 yr Floodplain
☒ > 10 yr - 100 yr Floodplain
☐ > 100 yr - 500 yr Floodplain
☐ > 500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Drinking Water Intakes Been Identified:

☒ Yes
☐ No

If Yes, Enter Population Served by Primary Target Intakes:

0 People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served
------	------------	------------	-------------------

ALL S/W INTAKES ARE FOR
INDUSTRIAL USES

Total within 15 Miles 0

Fisheries Located Along the Surface Water Migration Path:

☒ Yes
☐ No

Have Primary Target Fisheries Been Identified:

☒ Yes
☐ No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)
-------------------------	------------

CHATAHOOCHEE RIVER ~3000



Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

GA0984200191

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☒ No

List Secondary Target Wetlands:

Water Body Flow (cfs) Frontage Miles

NONE

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☒ No

List Secondary Target Sensitive Environments:

Water Body Flow (cfs) Sensitive Environment Type

NONE

9. Soil Exposure Pathway

Are People Occupying Residences or
Attending School or Daycare on or Within 200
Feet of Areas of Known or Suspected
Contamination:

☐ Yes
☒ No

If Yes, Enter Total Resident Population:

0 People

Number of Workers Onsite:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Have Terrestrial Sensitive Environments Been Identified on
or Within 200 Feet of Areas of Known or Suspected
Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment:

NONE

10. Air Pathway

Is There a Suspected Release to Air:

☒ Yes
☐ No

Enter Total Population on or Within:

Onsite

8 WORKERS

0 - ¼ Mile

31-100 WORKERS

> ¼ - ½ Mile

~ 766

> ½ - 1 Mile

~ 3063

> 1 - 2 Miles

~ 12252

> 2 - 3 Miles

~ 20420

> 3 - 4 Miles

~ 28589

Total Within 4 Miles

~ 65200

Wetlands Located Within 4 Miles of the Site:

☐ Yes
☒ No

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within ¼ Mile of the Site:

Distance Sensitive Environment Type/Wetlands Area (acres)

Onsite

NONE

0 - ¼ Mile

NONE

> ¼ - ½ Mile

NONE

Appendix C

Sanifill Trip Report

Georgia Department of Natural Resources

205 Butler Street, S.E., Suite 1252, Atlanta, Georgia 30334

Joe D. Tanner, Commissioner
Harold F. Reheis, Director
Environmental Protection Division

September 2, 1992

TRIP REPORT

SITE NAME AND LOCATION: Southern States Landfill, Inc.
13 Collins Road
Atlanta, Georgia 30318
GAD 984 288 191

TRIP BY: Alexandra Brooks, Environmental Engineer *ayb*

DATE OF TRIP: September 1, 1992

OFFICIALS CONTACTED: James A. Leiper, Regional Engineer
Gerald Stelly, District Manager

REFERENCES: Preliminary Assessment

BACKGROUND:

The Southern States Landfill site is located on the western edge of the Atlanta City and Fulton County limits on the banks of the Chattahoochee River. It is bordered on the north by the Chattahoochee River, the southeast by Chambers Landfill, the west by Blue Circle Cement plant and on the east by a CSX rail line containing a pair of tracks, sewage treatment plant, water treatment plant and other industrial facilities. The total property area consists of approximately thirty nine (39) acres. Primary land use in the immediate area is heavily industrial and commercial use with residential use to the west.

Previous to 1984, the site was mined for clay. The time frame for the mining activities at this time is unknown. No other pre-landfilling use is known at this time.

Permit Number 060-010D was issued November 5, 1975 to Southern States Landfill, Inc. authorizing the operation of a sanitary landfill. The landfill was not developed until R. M. Cash and Sons, Inc. purchased the property in June, 1984. Landfilling operations began in October of 1984.

Since beginning operations, the landfill has accepted putrescible and nonputrescible commercial and residential solid waste. Regulated hazardous wastes were not accepted at the landfill. Any amount of hazardous substances should not be greater than that found in typical municipal sanitary landfills.

The site was owned and operated by Southern States Landfill, Inc. from its opening in 1984 until mid 1990, when it was sold to Sanifill, Inc., the present owner and operator. Waste was deposited in sequential manner beginning at the northeast corner near the railroad. Sometime after initial operations began, a construction and demolition waste section was added near the river at the northwestern corner of the site.

INSPECTION:

The main purpose of this inspection was to identify pathways and targets to supplement the Preliminary Assessment of Southern States Landfill.

This is an active landfill which is presently estimated for closure within six (6) months to a year. The surface water from the site is channeled to drainage swales and sedimentation ponds (one to the west of the site and another to the east which controls both Chambers and Sanifill runoff) which then drain to the Chattahoochee River. There are 29 landfill gas extraction well with a plan to install 10 more once closure is completed. The wells are connected to a vacuum extraction system which includes a flare to control the emissions. The landfill was not constructed with a liner. Groundwater monitoring has indicated the presence of hazardous constituents. An inspection of the vegetation around the site did not indicate any stress due to hazardous materials/constituents.

At the north end of the property, a section has been leased (in operation since 1952) for a sand pit which receives dredged sand from the river.

CONCLUSIONS:

Refer to Preliminary Assessment of Southern States Landfill (Sanifill) for conclusions.

RECOMMENDATIONS AND FOLLOW-UP REQUIRED:

Refer to Preliminary Assessment of Southern States Landfill (Sanifill) for recommendations.

PHOTOGRAPHS: Twelve

REVIEWED BY:  9/15

ATTACHMENTS: None

File: Sanifill; Atlanta (R)

f:\user\ale:Sanifill\ins

U.S. EPA REGION IV

SDMS

Unscannable Material Target Sheet

DocID: 10715676

Site ID: GAD984288191

Site Name: Southern States Landfill

Nature of Material:

Map:

☐

Computer Disks:

☐

Photos:

☒

CD-ROM:

☐

Blueprints:

☐

Oversized Report:

☐

Slides:

☐

Log Book:

☐

Other (describe): Site Photos

Amount of material: _____

* Please contact the appropriate Records Center to view the material *

Appendix D

Background Information



UNITED STATES GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

Georgia District
3039 Amwiler Rd.
Suite 130, Peachtree Business Center
Atlanta, GA 30360-2824



Telephone Number

+1 404 903 9100

Telefax Number

+1 404 903 9199

TO: Alexandra Brooks

FROM: Rob Allen

DATE: 9-14-92

MESSAGE: _____

NUMBER OF PAGES: 1

GWSI CODES

USE OF WATER:

A, aircond.; B, bottling; C, commercial; D, dewater; E, power; F, fire; H, domestic; I, irrigation; J, industrial (cooling); K, mining; M, medical; N, industrial; P, public supply; Q, aquaculture; R, recreation; S, stock; T, institutional; U, unused; Y, desalination; Z, other.

TOPOGRAPHIC SETTING:

A, alluvial fan; B, playa; C, stream channel; D, depression; E, dunes; F, flat; G, flood plain; H, hilltop; K, sinkhole; L, lake or swamp; M, mangrove swamp; O, offshore; P, pediment; S, hillside; T, terrace; U, undulating; V, valley flat; W, upland draw.

SOURCE OF DATA:

A, other gov't; D, driller; G, geologist; L, logs; M, memory; O, owner; R, other reported; S, reporting agency; Z, other.

METHOD OF CONSTRUCTION:

A, air-rotary; B, bored or augered; C, cable tool; D, dug; H, hydraulic rotary; J, jetted; P, air percussion; R, reverse rotary; T, trenching; V, driven; W, drive wash; Z, other.

CASING MATERIAL:

B, brick; C, concrete; D, copper; G, galv. iron; I, wrought iron; M, other metal; P, pvc or plastic; R, rock or stone; S, steel; T, tile; U, coated steel; W, wood; Z, other material.

TYPE OF FINISH:

C, porous concrete; F, gravel with perf.; G, gravel screen; H, horiz. gallery; O, open hole; P, perf. or slotted; S, screen; T, sand point; W, welled; X, open hole; Z, other.

TYPE OF MATERIAL FOR OPEN SECTIONS:

B, brass; C, concrete; G, galv. iron; I, wrought iron; M, other metal; P, pvc or plastic; R, stainless steel; S, steel; T, tile; Z, other.

TYPE OF LIFT (PUMP TYPE):

A, air; B, bucket; C, centrifugal; J, jet; P, piston; R, rotary; S, submersible; T, turbine; U, unknown; Z, other.

TYPE OF LOGS:

A, time; B, collar; C, calliper; D, driller's; E, electric; F, fluid conduct.; G, geologist; H, magnetic; I, induction; J, gamma ray; K, dip meter; L, lateral log; M, microlog; N, neutron; O, microresistivity log; P, photo video; Q, radioactive; S, sonic; T, temperature; U, gamma-gamma; V, fluid velocity; X, core; Z, other.

METHOD OF DISCHARGE MEASUREMENT:

A, acoustic meter; B, baller; C, current meter; D, Doppler meter; E, estimated; F, flume; M, totalling meter; O, orifice; P, pitot-tube meter; R, reported; T, trajectory; U, venturi meter; V, volumetric measurement; W, weir; Z, other.

METHOD OF WATER LEVEL MEASUREMENT:

A, airlift; B, analog; C, calibrated airlift; E, estimated; G, pressure gage; H, calibrated pressure gage; L, geophysical logs; M, manometer; N, non-rec. gage; R, reported; S, steel tape; T, electric tape; V, other type of electric tape; Z, other.

09/14/92 12:04

FAX 1 404 903 9199

USGS, WRD GEORGIA

003

DATE: 09/10/92

334930/0842757 -- HALF MILE RADIUS *1 QUARTER MILE*

PAGE 1

GRID NUMBER	STATION NAME	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	BOTTOM OF CASING (FEET)	DIAMETER OF CASING (IN)	DATE OF CONSTRUCTION	DISCHARGE (GPM)	PRIMARY USE OF WATER
10EE25	SONOCO PRODUCTS	334930	0842742	900.00	400	33.00	10.00	01 98	144.00	C
10EE26	SONOCO PRODUCTS	334933	0842745	900.00	500	23.00	8.00	03- 66	30.00	C
10EE27	SONOCO PRODUCTS	334926	0842745	900.00	500	23.00	--	04- 66	32.00	C

U.S. Geological Survey
Georgia District
GROUND-WATER SITE INVENTORY
Date: 9-11-92 Completed By: Rob Allen
These data were collected as part of
areal studies and **DO NOT** represent an
exhaustive search of wells in the area

09/14/92 12:04

FAX 1 404 903 9199

USGS, WRD GEORGIA

004

DATE: 09/10/92

334930/0842757 -- 1 MILE RADIUS

PAGE 1

GRID NUMBER	STATION NAME	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	BOTTOM OF CASING (FEET)	DIAMETER OF CASING (IN)	DATE OF CONSTRUCTION	DISCHARGE (GPM)	PRIMARY USE OF WATER	
10EE02	W.C. HALL	335010	0842815	858.00	79	40	6	82	--	U	
10EE25	SONOCO PRODUCTS	334930	0842742	900.00	400	33.00	10.00	81	58	144.00	C
10EE26	SONOCO PRODUCTS	334933	0842745	906.00	500	23.00	8.00	03	66	30.00	C
10EE27	SONOCO PRODUCTS	334926	0842745	900.00	500	23.00		04	66	32.00	C

09/14/92 12:06

FAX 1 404 903 9199

USGS, WRD GEORGIA

001

ATE: 09/10/92

334930/0842757 -- 2 MILE RADIUS

PAGE 1

GRID NUMBER	STATION NAME	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	BOTTOM OF CASING (FEET)	DIAMETER OF CASING (IN)	DATE OF CONSTRUCTION	DISCHARGE (GPM)	PRIMARY USE OF WATER
QEE02	W.C. HALL	335010	0842815	858.00	79	40	6	- -32	--	U
QEE25	SONOCO PRODUCTS	334930	0842742	900.00	400	33.00	10.00	01- -58	144.00	C
QEE26	SONOCO PRODUCTS	334933	0842745	900.00	500	23.00	8.00	03- -66	30.00	C
QEE27	SONOCO PRODUCTS	334926	0842745	900.00	500	23.00	--	04- -66	32.00	C
QEE29	SONOCO PRODUCTS	334929	0842744	899.00	499	38.00	8.00	01- -58	144.00	C
QEE30	SONOCO PRODUCTS	335030	0842633	800.00	480	74.00	6.00	01- -58	144.00	C

09/14/92 12:06

FAX 1 404 903 9199

USGS, WRD GEORGIA

0002

DATE: 09/11/92

334930/0842757 -- 3 MILE RADIUS

PAGE 1

GRID NUMBER	STATION NAME	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	BOTTOM OF CASING (FEET)	DIAMETER OF CASING (IN)	DATE OF CONSTRUCTION	DISCHARGE (GPM)	PRIMARY USE OF WATER
0EE01	W.C. HALL	334724	0842815	858.00	79	40	6	01- -52	163.00	H
0EE02	COOK, D.W.	335010	0842815	858.00	79	40	6	01- -52	163.00	U
0EE25	SONOCO PRODUCTS	334930	0842742	900.00	400	33.00	10.00	01- -58	144.00	C
0EE26	SONOCO PRODUCTS	334933	0842745	900.00	500	23.00	8.00	03- -66	30.00	C
0EE27	SONOCO PRODUCTS	334926	0842745	900.00	500	23.00	--	04- -66	32.00	C
0EE29	RICHARD L. AECK	335028	0842734	850.00	430	50.00	6.00	11- -72	100.00	H
0EE30	W. R. COX	335030	0842635	800.00	480	74.00	6.00	01- -68	25.00	H

DATE: 09/11/92

334930/0842757 -- 4 MILE RADIUS

PAGE 1

GRID NUMBER	STATION NAME	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	ALTITUDE OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	BOTTOM OF CASING (FEET)	DIAMETER OF CASING (IN)	DATE OF CONSTRUCTION	DISCHARGE (GPM)	PRIMARY USE OF WATER
10EE01	NIX, F S	334724	0842935	852.00	84.00	44.00	8.0	- 37	16.00	H
10EE02	W.C. HALL	335010	0842815	858.00	79	40	6	- 32	--	U
10EE04	COOK, D.W.	335037	0842959	1020	109	40	6	- 41	--	H
10EE17	SOUTHERN ALUMINUM, 2	334756	0842523	905.00	118	--	--	--	--	-
10EE21	SONOCO PRODUCTS	334930	0842742	900.00	400	33.00	10.00	01- 53	144.00	C
10EE23	MACDOUGALD-WARREN	334756	0842420	830.00	395	44.00	6.00	05- 57	130.00	U
10EE25	SONOCO PRODUCTS	334930	0842742	900.00	400	33.00	10.00	01- 53	144.00	C
10EE26	SONOCO PRODUCTS	334933	0842745	900.00	500	23.00	8.00	03- 66	30.00	C
10EE27	SONOCO PRODUCTS	334926	0842745	900.00	500	23.00	--	04- 66	32.00	C
10EE29	RICHARD L. AECK	335028	0842734	850.00	430	50.00	6.00	11- 72	100.00	H
10EE30	W. P. COX	335030	0842635	860.00	480	74.00	6.00	01- 68	25.00	H

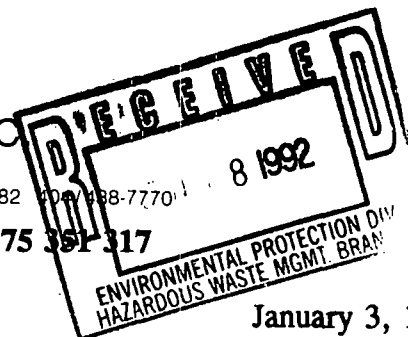


CHAMBERS

Development Company, Inc.

ATLANTA REGIONAL OFFICE
3200 HIGHLANDS PARKWAY ■ SUITE 400 ■ SMYRNA, GA 30082 (404) 488-7770

RETURN RECEIPT REQUESTED #P 875 351 317



January 3, 1992

FILE

RECEIVED

JAN 8 1992

SOLID WASTE MANAGEMENT PROGRAM

Mr. James Dunbar
Georgia Department of Natural Resources
Environmental Protection Division
4244 International Parkway, Suite 100
Atlanta, Georgia 30354

RE: Landfill Gas Migration
Sanifill/Bolton Road Landfill Common Boundary
Atlanta, Georgia

Dear Mr. Dunbar:

Enclosed, please find the most recent gas pressure and concentration data obtained from our proposed Bolton Road Landfill property. This data was obtained from twenty four (24) permanent gas monitoring probes installed within our buffer zone along our contiguous property boundary with the Sanifill landfill site. The pressure and concentration measurements from these probes suggest that combustible gas is migrating from the Sanifill property onto our property.

Also enclosed with this data, is the results of Gas Chromatography chemical analysis of both the gas retrieved from the sub-surface on our property as well as that of typical pipeline quality gas supplied by the Atlanta Gas Light Company. Many of the major chemical components of pipeline gas do not appear in the gas found on our site, strongly suggesting that this gas is being generated from a source such as decaying refuse. Multiple sub-surface investigations within our buffer zone and all across our property have not revealed any material that could generate the gas concentrations and pressures that we are reading in these probes.

We intend to continue the accumulation of this type of data as long as we suspect that gas is present on our property at levels which exceed those allowed by the Rules and Regulations of the State of Georgia, Title 391 - Department of Natural Resources, Article 3 - Environmental Protection, Chapter 4- Solid Waste Management, 1992, Amended 1973, '74, '89 (please reference our letter to you of 6-28-91). Please note that the presence of this gas on our property is interfering with the construction and subsequent operation of our landfill facility.

Sincerely,

Bob Ciecko
S. Region Environmental Supervisor

cc: Barbara Howard (GAEPD)

[illegible]



State of Georgia
Department of Natural Resources
ENVIRONMENTAL PROTECTION DIVISION



AIR QUALITY PERMIT

Permit No.

4953-060-10913

Effective Date

MAR 17 '92

In accordance with the provisions of Georgia's Air Quality Act of 1978 and the Rules, Chapter 391-3-1, adopted pursuant to or in effect under that Act,

Southern States Landfill 6201 Powers Ferry Road, Suite 150
Atlanta, Georgia 30339

is issued a Permit for the following:

The construction and operation of an enclosed flare for control of landfill gases.

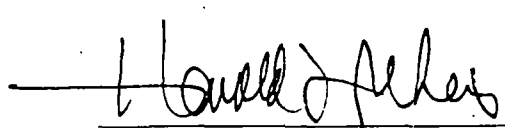
location:

13 Collins Road
Atlanta, Georgia 30377 Fulton County

This Permit is conditioned upon compliance with all provisions of Georgia's Air Quality Act of 1978, the Rules, Chapter 391-3-1, adopted or in effect under that Act, or any other condition of this Permit.

This Permit may be subject to revocation, suspension, modification or amendment by the Director for cause including evidence of noncompliance with any of the above; or for any misrepresentation made in the application(s) dated Oct. 9, 1991, supporting data entered therein or attached thereto, or any subsequent submittals or supporting data; or for any alterations affecting the emissions from this source.

This Permit is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached
5 page(s), which page(s) are a part of this Permit.



Director
Environmental Protection Division

COPIED

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 1 OF 5

General Requirements

1. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall to the extent practicable maintain and operate this source, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
2. The Permittee shall cause to be conducted a performance test at any specified emission point when so directed by the Division. The test results shall be submitted to the Division within 30 days of the completion of testing. Any tests shall be performed and conducted using methods and procedures which have been previously approved by the Division.

Allowable Emissions

3. The Permittee shall operate the flares in a manner such that there are no visible emissions.
4. The Permittee shall not discharge or cause the discharge into the atmosphere from this source any gases which contains nonmethane organic compound (NMOC) for the flare in excess of 20 ppmvd, as hexane, at 3 percent O₂; or, as an alternative, a destruction of NMOC by 98 percent.

Performance Testing

5. Within 30 days after achieving the maximum production rate at which the sources will be operated, but no later than 60 days after the initial startup, the Permittee shall conduct a nonmethane organic compound (NMOC) performance test on the flare system. The results of the performance test(s) shall be submitted to the Division within 30 days of the completion of testing.
6. Should production rates increase above the rates at which the acceptable performance tests were made, the Division may require that the flare system be tested for compliance at a higher production rate.
7. Performance tests shall be conducted and the data reduced in accordance with methods and procedures approved by the Division prior to such testing.



STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 2 OF 5

Performance Testing

8. The Permittee shall provide the Division thirty (30) days prior written notice of the date of any performance test(s) to afford the Division the opportunity to witness and/or audit the test, and shall provide with the notification a test plan in accordance with Division guidelines.
9. The Permittee shall provide performance test ports which comply with criteria approved by the Division.
10. All required continuous monitoring systems shall be installed, calibrated and operating when the test is conducted.
11. Copies of the daily record of operating parameters and the output data from all monitoring systems and devices shall be submitted with the test report for each day of testing.

Monitoring Requirements

12. The Permittee shall install, calibrate, maintain and operate a pressure drop indicator across each flame arrester.
13. The Permittee shall operate the flares with a flame present at all times. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device approved by the Division. The presence of a flare pilot flame shall be monitored on a continuous basis during the operation of the flares. Said records shall be retained by the Permittee for at least two years after the date of any such measurements.
14. The Permittee shall install, calibrate, maintain and operate a continuous temperature indicator and recorder for the measurement and recording of the exhaust gas temperature in the flare stack. Said records shall be retained by the Permittee for at least two years after the date of any such measurements.
15. The Permittee shall install, calibrate, maintain and operate a continuous flow indicator and recorder to monitor the landfill gas flow rate to the flare. Said records shall be retained by the Permittee for at least two years after the date of any such measurements.
16. Any monitoring system installed by the Permittee shall be in continuous operation except during calibration checks, zero and span adjustments or periods of repair. Maintenance or repair shall be conducted in the most expedient manner to minimize the period during which the system is out of service.



STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 3 OF 5

Monitoring Requirements

17. The Permittee shall provide and maintain a spare parts inventory for any monitoring system installed. A list of parts to be kept in inventory may be requested for approval by the Division.

Process and Control Equipment

18. The Permittee shall operate the flares at all times when emissions may be vented to them.
19. The Permittee shall operate the flare at a temperature of at least 1500°F as measured by the temperature indicator in the flare stack.
20. The Permittee shall equipped the flare with a failure alarm with automatic blower and landfill gas supply valve shut-off system in order to isolate the flare from the landfill gas supply line, to shut off the blower , and to notify a responsible party of the shut down. This safety system shall be tested monthly for proper operation and the results recorded in a form suitable for inspection by Division personnel for no less than two years.
21. Within ten working days after it is available, the Permittee must submit to the Division technical data describing the flare system. This data would include, but not be limited to, the completion of the attached data sheets. Upon review of the design data, the Division may revoke or modify this Permit if review of the data indicates that the control device(s) cannot effect compliance with any emission standard.
22. Routine maintenance shall be performed on all air pollution control equipment. Maintenance records shall be recorded in a permanent form suitable and available for inspection by the Division. The records shall be retained for a least two years following the date of such maintenance.

Fugitive Emissions

23. The Permittee shall take all reasonable precautions with any operation, process, handling, transportation, or storage facilities to prevent fugitive emissions of air contaminants.

Notification, Reporting and Recordkeeping

24. The Permittee shall maintain daily records of BTU content of the gas at the inlet to the flare, determined by an approved GC/MS method. These records shall be kept available for inspection or submittal for two years from the date of record.



STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 4 OF 5

Notification, Reporting and Recordkeeping

25. The Permittee shall read and record the parameters specified in Condition No. 12 at least once per operating day. A logbook containing these recordings shall be available for inspection for a period of two years following the last date of record.
26. The Permittee shall furnish the Division written notification as follows:
 - a. The actual date of initial startup of this source within 15 days after such date.
 - b. Certification that a final inspection has shown that construction has been completed in accordance with the application, plans, specifications and supporting documents submitted in support of this permit.

For purpose of this permit, "startup" shall mean the setting in operation of a source for its intended purpose.

27. In the event of any malfunction or breakdown of process or emission control equipment for a period of four hours or more which results in increased emissions, the owner or operator shall submit a written report which would describe the cause of the breakdown, the corrective actions taken, and the plans to prevent future occurrences. This report must be submitted by means that would insure the Division's receipt of the report by no later than seven days after the occurrence. The information submitted shall be adequate to allow the Division to determine if the increased emissions were due to a sudden and unavoidable breakdown. Such a report shall in no way serve to excuse, otherwise justify or in any manner affect any potential liability or enforcement action.
28. The Permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment or any periods during which a continuous monitoring system or monitoring device is inoperative. Said records shall be retained by the Permittee for at least two years after the date of any such startup, shutdown, malfunction, or measurements.

COPIED

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 5 OF 5

Notification, Reporting and Recordkeeping

29. The Permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part recorded in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports, and records.

Circumvention

30. The Permittee shall not build, erect, install or use any article, machine, equipment or process the use of which conceals an emission which would otherwise constitute a violation of an applicable emission standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged into the atmosphere.

Modifications

31. The Permittee shall give written notification to the Division when there is any modification to this source. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the plant before and after the change; and the anticipated completion date of the change.

Special Conditions

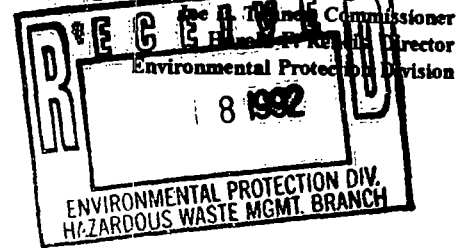
32. At any time that the Division determines that additional control of emissions from the facility may reasonably be needed to provide for the continued protection of public health, safety and welfare, the Division reserves the right to amend the provisions of this Permit pursuant to the Division's authority as established in the Georgia Air Quality Act of 1978 and the rules adopted pursuant to the Act.



*File (Slack) Fulton Co - Sanifill Southern States
Bolt Rd. MSU*

Georgia Department of Natural Resources

205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334



May 29, 1992

TRIP REPORT

Site Name and Location: Fulton Co. - Sanifill/Southern States,
Bolton Road Municipal Solid Waste Landfill

Trip by: Barbara Ross Howard, P. E., Environmental Engineer *BRH*
Permit Review Unit

Accompanied by: Mike Rodock, Environmental Specialist
North GA Region

Date of Trip: May 20, 1992

Officials Contacted: Gerald Stelly, Operator
Randy Chastain, Assistant Operator

Reference: Observed operation of active GAS Destruction System to correct
gas emissions at property line.

Comments:

1. The gas collection wells, condensation line, gas line and manifolds were inspected. Leaks were detected in the system and broken valves/connections were observed.
2. Collection wells were observed 400-500 feet from the Chambers Municipal Solid Waste Landfill boundary. Approximately three (3) wells were observed. Landfill gas odor was strongly detected along the boundary line.

Conclusions:

1. Additional collection wells may be required.
2. Emission testing should not occur until the collection system is in proper "running order" i.e. without leaks and open conduit and following the installation of any additional wells that may be required to correct the gas migration over the site property line.

Recommendations and Follow-up Required: The gas collection system as-built plan should be submitted to EPD.

Photographs: None

Reviewed by: *Mark O. Smith*

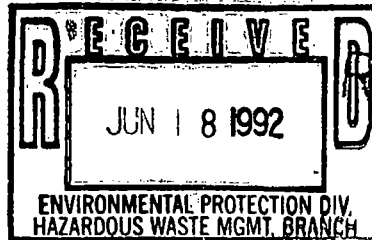
Attachments: None

cc: Bob Mahoney
Mike Rodock
Tom Shillock
Jim Lieper
Roger Patrick

BRH:dh

Sanifill

April 9, 1992



APR 13 1992

SOLID WASTE MANAGEMENT PROGRAM

Mr. Michael J. Rodock
Environmental Specialist
Georgia Department of Natural Resources
Environmental Protection Division
North Georgia Regional Office
4244 International Parkway, Suite 114
Atlanta, Georgia 30354

Re: Southern States Landfill
Landfill Gas Monitoring Results

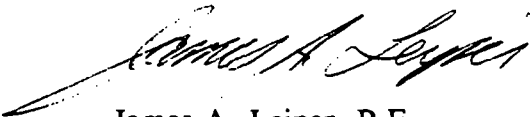
Dear Mr. Rodock:

Enclosed please find landfill gas monitoring results for the Southern States Landfill for the period March 25 through April 8, 1992.

If you have any questions or comments, please contact me at
(404) 953-0608.

Sincerely,

SANIFILL, INC.


James A. Leiper, P.E.
Regional Engineer

cc: → Barbara Howard
J. Lewis Tinley
Gerald Stelly
Dave Turkal
Chuck Williams

SANIFILL

Combustible Gas Survey

Page of

LANDFILL: Southern States Landfill

STATE PERMIT NO.:

DATE: 4-3-92

WEATHER CONDITIONS: Clear Temp 45°

Monitoring Equipment (Make/Model): Gascope 625

Date of Last Equipment Calibration Check:

COMBUSTIBLE GAS LEVELS

[illegible]

Individual(s) Performing Testing:

Individual(s) Accompanying:

Combustible Gas Survey

Individual(s) Accompanying: _____

Individual(s) Accompanying: _____

Combustible Gas Survey

LANDFILL: SOUTHERN STATES LANDFILL
STATE PERMIT NO.:
DATE: 3-27-92
WEATHER CONDITIONS: Clear 45°

Monitoring Equipment (Make/Model): _____
Date of Last Equipment Calibration Check: _____

[illegible]

Individual(s) Performing Testing: Donald Williams
Kathy Chastain

Individual(s) Accompanying: _____

Combustible Gas Survey

LANDFILL: SOUTHERN STATES LANDFILL

STATE PERMIT NO.:

DATE: 3-26-92

WEATHER CONDITIONS: *Partly Cloudy Temp. 40°*

Monitoring Equipment (Make/Model): Fluke 625

Date of Last Equipment Calibration Check: _____

Individual(s) Performing Testing: Donald Williams

Individual(s) Accompanying: _____

Combustible Gas Survey

LANDFILL: Southern States Landfill
STATE PERMIT NO.: _____
DATE: 3-25-92
WEATHER CONDITIONS: RAIN Temp. 42°

Date of Last Equipment Calibration Check:

Individual(s) Performing Testing:

Individual(s) Accompanying:

Georgia Department of Natural Resources

205 Butler Street, S.E., East Floyd Tower, Atlanta, Georgia 30334

Joe D. Tanner, Commissioner
Harold F. Reheis, Director
Environmental Protection Division

APR 17 '92

RECEIVED

APR 15 1992

Mr. James Leiper
Regional Engineer
Sanifill / Southern States Landfill
6201 Powers Ferry Road
Suite 150
Atlanta, Georgia 30339

SOLID WASTE MANAGEMENT PROGRAM

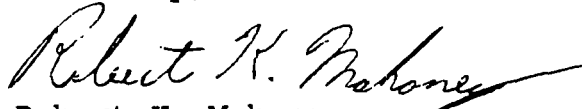
RE: Application No. 5195
Dated October 9, 1991

Dear Mr. Leiper:

Enclosed is Air Quality Permit No. 4953-060-10913 for the construction and operation of an enclosed flare for the control of landfill gases. Note carefully the conditions of compliance which include several recordkeeping requirements and a stack test.

In addition, attached are three pages that are required to be submitted under Condition No. 21. Should you have any questions or comments, please contact me at (404) 656-4867.

Sincerely,



Robert K. Mahoney
Environmental Engineer
Air Pollution Compliance Program

c: Barbara Howard, Solid Waste Program

Enclosures



State of Georgia
Department of Natural Resources
ENVIRONMENTAL PROTECTION DIVISION



AIR QUALITY PERMIT

Permit No.

4953-060-10913

Effective Date

MAR 17 '92

In accordance with the provisions of Georgia's Air Quality Act of 1978 and the Rules, Chapter 391-3-1, adopted pursuant to or in effect under that Act,

Southern States Landfill 6201 Powers Ferry Road, Suite 150
Atlanta, Georgia 30339

is issued a Permit for the following:

The construction and operation of an enclosed flare for control of landfill gases.

location:

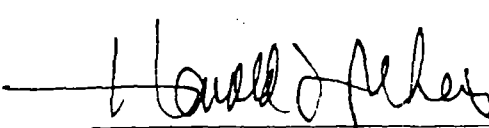
13 Collins Road
Atlanta, Georgia 30377 Fulton County

This Permit is conditioned upon compliance with all provisions of Georgia's Air Quality Act of 1978, the Rules, Chapter 391-3-1, adopted or in effect under that Act, or any other condition of this Permit.

This Permit may be subject to revocation, suspension, modification or amendment by the Director for cause including evidence of noncompliance with any of the above; or for any misrepresentation made in the application(s) dated Oct. 9, 1991, supporting data entered therein or attached thereto, or any subsequent submittals or supporting data; or for any alterations affecting the emissions from this source.

This Permit is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached

5 page(s), which page(s) are a part of this Permit.



Director
Environmental Protection Division

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 1 OF 5

General Requirements

1. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall to the extent practicable maintain and operate this source, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
2. The Permittee shall cause to be conducted a performance test at any specified emission point when so directed by the Division. The test results shall be submitted to the Division within 30 days of the completion of testing. Any tests shall be performed and conducted using methods and procedures which have been previously approved by the Division.

Allowable Emissions

3. The Permittee shall operate the flares in a manner such that there are no visible emissions.
4. The Permittee shall not discharge or cause the discharge into the atmosphere from this source any gases which contains nonmethane organic compound (NMOC) for the flare in excess of 20 ppmvd, as hexane, at 3 percent O₂; or, as an alternative, a destruction of NMOC by 98 percent.

Performance Testing

5. Within 30 days after achieving the maximum production rate at which the sources will be operated, but no later than 60 days after the initial startup, the Permittee shall conduct a nonmethane organic compound (NMOC) performance test on the flare system. The results of the performance test(s) shall be submitted to the Division within 30 days of the completion of testing.
6. Should production rates increase above the rates at which the acceptable performance tests were made, the Division may require that the flare system be tested for compliance at a higher production rate.
7. Performance tests shall be conducted and the data reduced in accordance with methods and procedures approved by the Division prior to such testing.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 2 OF 5

Performance Testing

8. The Permittee shall provide the Division thirty (30) days prior written notice of the date of any performance test(s) to afford the Division the opportunity to witness and/or audit the test, and shall provide with the notification a test plan in accordance with Division guidelines.
9. The Permittee shall provide performance test ports which comply with criteria approved by the Division.
10. All required continuous monitoring systems shall be installed, calibrated and operating when the test is conducted.
11. Copies of the daily record of operating parameters and the output data from all monitoring systems and devices shall be submitted with the test report for each day of testing.

Monitoring Requirements

12. The Permittee shall install, calibrate, maintain and operate a pressure drop indicator across each flame arrester.
13. The Permittee shall operate the flares with a flame present at all times. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device approved by the Division. The presence of a flare pilot flame shall be monitored on a continuous basis during the operation of the flares. Said records shall be retained by the Permittee for at least two years after the date of any such measurements.
14. The Permittee shall install, calibrate, maintain and operate a continuous temperature indicator and recorder for the measurement and recording of the exhaust gas temperature in the flare stack. Said records shall be retained by the Permittee for at least two years after the date of any such measurements.
15. The Permittee shall install, calibrate, maintain and operate a continuous flow indicator and recorder to monitor the landfill gas flow rate to the flare. Said records shall be retained by the Permittee for at least two years after the date of any such measurements.
16. Any monitoring system installed by the Permittee shall be in continuous operation except during calibration checks, zero and span adjustments or periods of repair. Maintenance or repair shall be conducted in the most expedient manner to minimize the period during which the system is out of service.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 3 OF 5

Monitoring Requirements

17. The Permittee shall provide and maintain a spare parts inventory for any monitoring system installed. A list of parts to be kept in inventory may be requested for approval by the Division.

Process and Control Equipment

18. The Permittee shall operate the flares at all times when emissions may be vented to them.
19. The Permittee shall operate the flare at a temperature of at least 1500°F as measured by the temperature indicator in the flare stack.
20. The Permittee shall equipped the flare with a failure alarm with automatic blower and landfill gas supply valve shut-off system in order to isolate the flare from the landfill gas supply line, to shut off the blower , and to notify a responsible party of the shut down. This safety system shall be tested monthly for proper operation and the results recorded in a form suitable for inspection by Division personnel for no less than two years.
21. Within ten working days after it is available, the Permittee must submit to the Division technical data describing the flare system. This data would include, but not be limited to, the completion of the attached data sheets. Upon review of the design data, the Division may revoke or modify this Permit if review of the data indicates that the control device(s) cannot effect compliance with any emission standard.
22. Routine maintenance shall be performed on all air pollution control equipment. Maintenance records shall be recorded in a permanent form suitable and available for inspection by the Division. The records shall be retained for a least two years following the date of such maintenance.

Fugitive Emissions

23. The Permittee shall take all reasonable precautions with any operation, process, handling, transportation, or storage facilities to prevent fugitive emissions of air contaminants.

Notification, Reporting and Recordkeeping

24. The Permittee shall maintain daily records of BTU content of the gas at the inlet to the flare, determined by an approved GC/MS method. These records shall be kept available for inspection or submittal for two years from the date of record.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 4 OF 5

Notification, Reporting and Recordkeeping

25. The Permittee shall read and record the parameters specified in Condition No. 12 at least once per operating day. A logbook containing these recordings shall be available for inspection for a period of two years following the last date of record.
26. The Permittee shall furnish the Division written notification as follows:
 - a. The actual date of initial startup of this source within 15 days after such date.
 - b. Certification that a final inspection has shown that construction has been completed in accordance with the application, plans, specifications and supporting documents submitted in support of this permit.

For purpose of this permit, "startup" shall mean the setting in operation of a source for its intended purpose.

27. In the event of any malfunction or breakdown of process or emission control equipment for a period of four hours or more which results in increased emissions, the owner or operator shall submit a written report which would describe the cause of the breakdown, the corrective actions taken, and the plans to prevent future occurrences. This report must be submitted by means that would insure the Division's receipt of the report by no later than seven days after the occurrence. The information submitted shall be adequate to allow the Division to determine if the increased emissions were due to a sudden and unavoidable breakdown. Such a report shall in no way serve to excuse, otherwise justify or in any manner affect any potential liability or enforcement action.
28. The Permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment or any periods during which a continuous monitoring system or monitoring device is inoperative. Said records shall be retained by the Permittee for at least two years after the date of any such startup, shutdown, malfunction, or measurements.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

PERMIT NO. 4953-060-10913

PAGE 5 OF 5

Notification, Reporting and Recordkeeping

29. The Permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part recorded in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports, and records.

Circumvention

30. The Permittee shall not build, erect, install or use any article, machine, equipment or process the use of which conceals an emission which would otherwise constitute a violation of an applicable emission standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged into the atmosphere.

Modifications

31. The Permittee shall give written notification to the Division when there is any modification to this source. This notice shall be submitted sufficiently in advance of any critical date involved to allow sufficient time for review, discussion, and revision of plans, if necessary. Such notice shall include, but not be limited to, information describing the precise nature of the change; modifications to any emission control system; production capacity of the plant before and after the change; and the anticipated completion date of the change.

Special Conditions

32. At any time that the Division determines that additional control of emissions from the facility may reasonably be needed to provide for the continued protection of public health, safety and welfare, the Division reserves the right to amend the provisions of this Permit pursuant to the Division's authority as established in the Georgia Air Quality Act of 1978 and the rules adopted pursuant to the Act.

Bolton (Atlanta)
Sou. States - Bolton Rd.
Georgia Department of Natural Resources

205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334

J. Leonard Ledbetter, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division

November 20, 1987

Mr. Raymond Cash, President
Southern States Landfill, Inc.
4696 Oakdale Road
Smyrna, Georgia 30080

SUBJECT: Ground-Water Monitoring at the Southern States, Bolton Road
Sanitary Landfill

Dear Mr. Cash:

Ground water samples collected from wells adjacent to the subject facility show consistently high levels of specific conductance and chlorides. Over the period from 1984 to 1987, specific conductance in the three downgradient wells averages approximately 800 μ mhos per cubic centimeter.

Therefore, please develop an assessment monitoring plan for the Bolton Road facility. The goal of an assessment monitoring plan is to define the extent of contamination and to identify specific chemical constituents in the leachate. Submit the completed plan to this office by January 31, 1988.

If there are any further questions, please do not hesitate to contact Tom Watson at 404/656-2836.

Sincerely,

James W. Dunbar
James W. Dunbar

Program Manager
Solid Waste Management Program

JWD:twf

c: John D. Taylor, Jr.
Morgan V. Cantrell ✓
File (WM)

ENVIRONMENTAL PROTECTION DIVISION

DEPARTMENT OF NATURAL RESOURCES

STATE OF GEORGIA

IN RE: Southern States LF, Inc. - Bolton Road §
Solid Waste Disposal Site and §
Air Curtain Destructor Operation; § ORDER NO. EPD-SW- 385
Raymond M. Cash, President §
Respondent §

CONSENT ORDER

WHEREAS, the above Respondent owns and is responsible for the maintenance and operation of the Southern States LF, Inc. - Bolton Road Solid Waste Disposal Site (hereinafter referred to as the "Disposal Site"), and the Southern States, LF, Inc. Air Curtain Destructor Operation (hereinafter referred to as the "Incinerator"), located off Bolton Road on Collins Road in Atlanta, Fulton County, Georgia; and

WHEREAS, under the Georgia Solid Waste Management Act, O.C.G.A. § 12-8-20, et. seq., (hereinafter referred to as the "Act"), the General Assembly of Georgia designated the Environmental Protection Division (hereinafter referred to as the "Division") to administer the provisions of the Act; and

WHEREAS, O.C.G.A. §12-8-27 of said Act assigns the power and responsibility to the Director of the Division (hereinafter referred to as the "Director") to issue permits covering the operations of solid waste disposal sites, stipulating in each permit the condition under which such permit was issued; and

WHEREAS, O.C.G.A. § 12-8-30 of said Act gives the Director of the Division the power to issue orders as may be necessary to enforce compliance with the provisions of the Act and all rules and regulations promulgated hereunder; and

WHEREAS, O.C.G.A. § 12-8-26 of said Act makes it unlawful for any person to engage in solid waste handling, except in such a manner to conform and comply with all rules, regulations and orders established under the provisions of the Act; and

WHEREAS, Rules for Solid Waste Management, Chapter 391-3-4, as required under O.C.G.A. § 12-8-23 of said Act were established and became effective October 9, 1974; and

WHEREAS, Section .02 of the Rules provides that any person engaging in solid waste handling or operation of a facility must comply with the conditions of permits issued by the Director; and

WHEREAS, Section .04(1) of the Rules provides for the proper manner of solid waste handling; and

WHEREAS, Section .07 of the Rules provides operation requirements with which any person engaged in disposal operations shall comply; and

WHEREAS, Section .08(1)(a) of the Rules provides operation requirements with which any person engaged in incineration operations shall comply; and

WHEREAS, a Permit to engage in solid waste handling, Number 060-010D(SL), including the operation of a solid waste disposal site, was issued to Southern States LF, Inc., in accordance with O.C.G.A. §12-8-27 of the Act, on November 5, 1975; and

WHEREAS, the Permit issued on November 5, 1975, to Southern States LF, Inc., by the Director establishes conditions under which the disposal site shall be operated; and

WHEREAS, a Permit to engage in solid waste handling, Number 060-067P(Inc), including the operation of a solid waste incinerator, was issued to Southern States LF, Inc., in accordance with O.C.G.A. § 12-8-27 of said Act, on November 7, 1986; and

WHEREAS, the Permit issued on November 7, 1986, to Southern States LF, Inc., by the Director, establishes conditions under which the Incinerator shall be operated; and

WHEREAS, an inspection of the Disposal Site and Incinerator, operated by the Respondent, was conducted on June 5, 1987; and

WHEREAS, the Respondent was notified of the violations found as a result of the inspection by letter of July 1, 1987; and

WHEREAS, the Disposal Site has been operated and maintained in violation of the following rules: Chapter 391-3-4-.04(4)(a); 391-3-4-.07(1)(a) 4., 6., 8., 11., and 13; and

WHEREAS, the Disposal Site has been operated and maintained in violation of the Solid Waste Handling Permit No. 060-010D(SL), permit conditions No. 5., 8., 9., 12., and 15; and

WHEREAS, the Southern States LF, Inc. - Bolton Road Sanitary Landfill Modified Design and Operational Plan, approved by the Division on September 14, 1984, and made a part of Permit No. 060-010D(SL), required the construction of a 36 inch and 30 inch concrete pipe system with drop inlets, and established limits of fill on the site; and

WHEREAS, the Disposal Site has been constructed with a "temporary" 18 inch metal pipe system without drop inlets and beyond the established limits of fill as approved by the Modified Design and Operational Plan, approved by the Division on September 14, 1984; and

WHEREAS, the Incinerator has been constructed, operated, and maintained in violation of the following rules: Chapter 391-3-4-.04(1); 391-3-4-.04(4)(a); 391-3-4-.08(1)(a) 1., 2., 4., 6., and 7.; and

WHEREAS, the Incinerator has been constructed, operated, and maintained in violation of Solid Waste Handling Permit No. 060-067P(Inc), permit conditions 1., 2., 3., 12., 13., and 14.; and

WHEREAS, the Incinerator had been removed and solid waste had been allowed to open burn in the designated location of the Incinerator; and

WHEREAS, solid waste designated for burning in the Incinerator has been found to contain solid wastes not permissible for burning under the conditions of Solid Waste Handling Permit No. 060-067P(Inc); and

WHEREAS, the construction of the Incinerator must be in accord with a plan approved by the Division dated October 31, 1986; and

WHEREAS, O.C.G.A. § 12-8-41 of said Act provides that any person violating any provision of this Act or intentionally or negligently failing or refusing to comply with any final or emergency order of the Director issued as provided herein, shall be liable to a civil penalty not to exceed \$1,000.00 for such violation and an additional civil penalty not to exceed \$500.00 for each day during which such violation continues; and

WHEREAS, an amicable disposition of these allegations concerning the Disposal Site and the Incineration Operation is considered to be for all parties concerned in the best interest of the citizens of the City of Atlanta and the State of Georgia; and

WHEREAS, the Respondent desires to cooperate with the State of Georgia in a mutual effort to ensure that safe and proper disposal of solid waste is provided; and


NOW, THEREFORE, the Director and the Respondent CONSENT and AGREE to the following:

1. Immediately, cease burning solid waste on the Disposal Site, except by means of the approved Incinerator.
2. The installation of the Incinerator will be in accord with the approved Plan, dated October 31, 1986. An inspection by a representative of the Division will be conducted prior to the start up of the Incinerator.
3. The solid wastes designated for burn in the Incinerator will be properly managed in order to eliminate the stockpiling and burning of solid wastes not permissible, as delineated in the Solid Waste Handling Permit Conditions.
4. Immediately, cease disposing solid waste beyond the approved fill limits.
5. Within thirty (30) days of the date of issuance of this Order, a modification to the Disposal Site Plan will be submitted to the Division, which shows the deviations to the currently approved Plan, regarding the fill limits. Said Plan will include a proposed modified drainage plan for approval by the Division.
6. Within sixty (60) days after issuance of this Order, all finished lifts will have appropriate earth cover applied, graded, and grassed.
7. Immediately, cease acceptance of wastewaters from concrete trucks at the Disposal Site.
8. In the future, the Disposal Site and Incinerator will be constructed, operated, and maintained in compliance with all provisions of the Act, the Rules and Regulations for Solid Waste Management, all conditions of Permits No. 060-010D(SL) and 060-067P(Inc), and all Plans, approved by the Division.

9. This Consent Order shall not constitute a finding or adjudication of a violation of any State Law by the Respondent nor does the Respondent by his consent, agree to any violations of State Law or admit any liability to any third party or parties.
10. The sole purpose of this Consent Order is to resolve and dispose of the above mentioned allegations concerning the operation of the Disposal Site.
11. The Respondent agrees to pay the State of Georgia the sum of \$1,000.00. This sum will be regarded as a negotiated consideration of a disputed claim and that the above negotiated consideration is a final settlement and shall release the Respondent from any claim from the State of Georgia with respect to the alleged Solid Waste Management Act violations prior to July 1987.

By agreement of the parties, this Order shall be considered final and effective immediately, and shall not be appealable and Southern States LF, Inc. does hereby waive any hearing on the terms and conditions of same.

It is so ORDERED, CONSENTED and AGREED to this 15 day of August, 1987.


J. Leonard Ledbetter
Director

Southern States LF, Inc.

BY: 

Title: president

Date: 8-15-87

**Tribble &
Richardson
Inc.** **TR**

Consulting Engineers / Surveyors / Planners
Laboratory Services

July 23, 1987

Mr. Claude W. Goodley, Jr.
City of Atlanta
1540 Northside Dr., N.W.
Atlanta, Georgia 30318

Subject: Southern States - Bolton Road
T&R Project No. 5566-013-01

Dear Mr. Goodley:

We tested the referenced sanitary landfill site boundary for methane gas on July 10, 1987. Sixteen locations on the boundary were tested with not measurable methane gas found.

Should you have any questions, please call.

Yours very truly,

TRIBBLE & RICHARDSON, INC.

Bill

William F. Hodges, P.E.

WFH/mg

cc: Raymond Cash
Jim Dunbar

RECEIVED

JUL 27 1987

Solid Waste
Management Program

Fulton (Atlanta)
Southern States - Bolton Rd.

Georgia Department of Natural Resources

205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334

J. Leonard Ledbetter, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division
(404) 656-4713

February 27, 1987

Mr. T. W. Dean
Freight Damage Prevention Supervisor
CSX Transportation
Freight Damage Prevention and Claims
1590 Marietta Boulevard, N.W.
Atlanta, Georgia 30318

Re: Disposal of polyvinyl alcohol

Dear Mr. Dean:

We have reviewed the data you submitted regarding the proposed disposal of 25,000 - 28,000 pounds of polyvinyl alcohol generated as a result of a spill on January 14, 1987 near Lawrenceville, Georgia.

A review of the Material Safety Data Sheet for the product has been conducted. Based upon our review, the material is a non-hazardous solid waste.

Being nonhazardous, we have no objection to disposal in a permitted sanitary landfill with the concurrence of the landfill owner. As indicated in your correspondence, you propose to dispose of this waste in the Southern States Landfill located at 4696 Oakdale Road in Smyrna, Georgia. Disposal of this waste is conditional upon the waste being bladeable prior to its delivery to the landfill.

Please be advised that should the character of the waste change as a result of process modifications, raw material changes, etc., it is your responsibility to re-analyze the waste so that it continues to be properly classified as hazardous or nonhazardous.

Should you need additional information, please call 404/656-7802.

RECEIVED

MAR 3 1987

Solid Waste
Management Program

BM:tcw:1046K

c: James W. Dunbar

File: Gwinnett County (G)
CSX Transportation, Corp. H.Q., Jacksonville (R)

Sincerely,



Bill Mundy
Unit Coordinator
Hazardous Waste Management Program

Georgia Department of Natural Resources

205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334

RECEIVED

J. Leonard Ledbetter, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division
(404) 656-4713

MAY 1986
MUNICIPAL SOLID WASTE

November 12, 1986

Mr. Tom Davis
Haztech, Inc.
5280 Panola Road
Decatur, Georgia 30035-4013


Dear Mr. Davis:

This is to confirm receipt of your correspondence dated November 12, 1986 at which time you submitted a request to dispose of wastes generated from the clean-up of the Fina Oil and Chemical Company warehouse located on Bolton Road in Atlanta. Your basic proposal is to dispose of these wastes in the Southern States landfill also located on Bolton Road.

Based on the information you have submitted it has been determined that the wastes which you wish to dispose of in the Southern States landfill are non-hazardous and therefore are approved for disposal at that site. Please be advised that should the nature of the waste change or should other wastes require disposal that have not been identified or for which approval has not been obtained that you should contact this office prior to disposal.

If you have any questions or need any assistance please contact Mr. Tim Cash at (404) 656-7802.

Sincerely,


John D. Taylor, Jr.
Chief
Land Protection Branch

cc: Jim Dunbar
Jimmy Kirkland
Tim Cash

EVALUATION OF GROUNDWATER QUALITY

AT THE

**SOUTHERN STATES/SANIFILL
SANITARY LANDFILL
BOLTON ROAD SITE**

ATLANTA, GEORGIA

MAY 1991

**RECEIVED
EGS**

APR 29 1992

**PREPARED FOR
SANIFILL, INC.**



***TRIBBLE &
RICHARDSON INC.***

**CONSULTING ENGINEERS/SURVEYORS/PLANNERS
LABORATORY SERVICES**

PHONE: (912) 474-6100

PROJECT NO. (600) 5586-018-01

RECEIVED
GGS

EXECUTIVE SUMMARY

APR 29 1992

To comply with the requirements of the Georgia Environmental Protection Division Land Compliance Program, Sanifill, Inc. authorized Tribble & Richardson, Inc. to complete an evaluation of possible groundwater impact from operations at the Southern States/Sanifill Sanitary Landfill-Bolton Road Site. Groundwater monitoring data since 1984 was statistically evaluated. The study concluded that:

- indicator values show no groundwater impact
- metals values show no groundwater impact
- 44 of the 45 VOC's show no groundwater impact

One VOC, chlorobenzene, has sporadically appeared in three of the six downgradient wells. The average detected level of this compound is approximately 17 times less than any action level established by the EPA. Since the conclusion of groundwater impact from the landfill is not supported by any of the other data, there is a possibility that this constituents may have been introduced from a source rather than the subject landfill.

TABLE OF CONTENTS

	PAGE
I. Purpose	1
II. Site Description	
A. Site History	3
B. Surrounding Influences	4
C. Geology and Hydrogeology	5
D. Monitoring Well Characteristics	6
III. Groundwater Monitoring	8
IV. Statistical Methods	
A. Basic Statistics	10
B. Strategy	12
C. Results	15
V. Conclusions	19

APPENDICES

1. Tabulated Data
2. Well Locations
3. References

I. PURPOSE

This report was prepared for Sanifill, Inc. to submit to the Georgia Environmental Protection Division (EPD) Land Protection Compliance Program. The EPD notified Sanifill, Inc. that the second stage of the Assessment Monitoring Plan for the Southern States/Sanifill Sanitary Landfill-Bolton Road Site was due within forty-five days of receipt of their April 10, 1991 letter. This letter was received by Southern States/Sanifill on April 16, 1991.

The first stage of the plan had been developed by Tribble & Richardson, Inc. in January, 1988. Based on this plan, quarterly testing for pH, chloride, and conductance and semiannual testing for metals and volatile organic compounds (VOC) was instituted. In addition, the plan specified submission of a second report to determine whether groundwater impact had occurred due to landfilling activities at the subject site. The initial plan had been developed in response to a November 20, 1987 EPD letter noting "...consistently high levels of specific conductance and chlorides. Over the period from 1984 to 1987, specific conductance in the three down-gradient wells averages approximately 800 umhos per cubic centimeter." The EPD further stated that the goal of the plan was "... to define the extent of contamination and to identify specific chemical constituents in the leachate." Since insufficient data existed at the time of the initial plan to support that contamination had occurred, no conclusions were

reached. However, since an accelerated testing schedule over the ensuing three years has supplied adequate data, an assessment can now be performed.

The purpose of this report is to statistically evaluate historical groundwater monitoring results in relation to well characteristics, site hydrogeology, landfill operations, and testing variability to determine if the subject site has adversely impacted groundwater quality.

II. SITE DESCRIPTION

A. Site History

The site is located off Bolton Road at the northern end of Collins Road, and south of the Chattahoochee River in Land Lots 243, 244 and 253 of the 17th Land District, Fulton County, Georgia. The total site encompasses approximately 45 acres.

A permit, numbered 060-010D was issued on November 5, 1975 to Southern States Landfill, Inc. authorizing the operation of a sanitary landfill. However, a landfill was not developed until R.M. Cash & Sons, Inc. acquired the property in June, 1984. Landfilling operations began in October of 1984.

Since beginning operations, the landfill has accepted putrescible and nonputrescible commercial and residential solid waste. Regulated hazardous wastes were not accepted at the landfill. Any amounts of hazardous waste should not be greater than that found in typical municipal sanitary landfills.

The site was owned and operated by Southern States Landfill, Inc. from its opening in 1984 until mid 1990, when it was sold to Sanifill, Inc., the present owner and operator. Waste was deposited in a sequential manner beginning at the northeast corner near the railroad. Sometime after initial operations began, a construction and demolition waste section was added near the river in

Area 1 at the northwestern corner of the site.

Previous to 1984 the site was mined for clay. The time frame for the mining activities at this time is unknown. No other pre-landfilling use is known at this time.

B. Surrounding Influences

Adjacent offsite land uses could affect the groundwater underlying the subject site. To the southeast and immediately upgradient of WMW2, seven above ground storage tanks were located on adjacent property. These tanks have been removed and contents of the tanks are unknown. A maintenance facility also located on adjacent property. This maintenance facility was located southeast and immediately upgradient of WMW1. The maintenance facility has also been removed. However, several 55 gallon drums filled with 10W30 lubricating oil still remain close to this location. In addition, several past industrial activities and features located on the property adjoining the sites eastern boundary may affect the groundwater underlying the subject site. These items include: 1) an abandoned landfill, 2) an eight inch diameter steel pipe of unknown purpose which penetrates surface strata and provides direct communication to the underlying aquifer, and 3) evidence of at least one underground storage tank containing petroleum products. Neighboring industries consists of Blue Circle Cement

Works to the west, and a paper recycling facility to the east. The southeastern portion of the landfill is bounded by a currently undeveloped tract; however, this region has been permitted for development as a sanitary landfill.

C. Geology and Hydrogeology

The site is located within the Brevard Zone. Alluvium deposits overlie the bedrock along the Chattahoochee River. Alluvium consists of sands and silts that are transported by the river from source areas. All the down gradient wells are placed in alluvium. In contrast, a residuum formed by the in-situ weathering of the bedrock overlies the higher areas of the site, where all the upgradient wells are located. Groundwater is currently suspected to generally flow towards the north, or to the river. The river flows in a westerly direction.

Groundwater occurs under water table conditions. The downgradient wells are located adjacent to the Chattahoochee River. The 100 year flood plain is 767.40 feet mean sea level (MSL). The three old and the three new downgradient wells are constructed at approximate elevations of 760 to 776 MSL at the soil surface. The groundwater elevations of these six downgradient wells range from approximately 744 to 750 MSL. The upgradient wells are located along the southern property boundary.

collected and tested by another knowledgeable firm. Since December, 1987, the samples have been collected and tested by representatives from Tribble & Richardson, Inc. Since 1987, the sampling methods have substantially followed the Georgia EPD recommended protocol with one significant variation. WMW1 and WMW2 are not purged due to the excessive water volume; rather, standing water is collected.

IV. STATISTICAL METHODS

A. Basic Statistics

Contamination usually begins in a subtle manner. Because of the natural variability of data due to sampling and testing procedures and seasonal effects, contamination is usually not detectable by unaided review of data. Unaided visual review is only sufficient to detect evidence of gross contamination. Therefore, statistical methods are used to determine if groundwater impact has occurred.

There are numerous statistical methods for comparing values to determine if there is a significant difference. All are based on the fact that tests results will naturally vary some, even under the most controlled circumstances, and that an apparent difference may not have any significance. The EPA regulations recognize that groundwater quality data vary temporarily and spatially due to natural effects, and are also affected by sampling and analytical errors.¹

Due to natural variability, the determination of a change in water quality should be linked to probability theory. Two regulatory situations present themselves:

¹Sampling error in this context refers to error introduced by the technician during well sampling. Analytic error occurs in the laboratory. These are not to be confused with natural "sampling" error associated with spatial and temporal fluctuations in water quality.

1. Has a water quality standard been exceeded?
2. Has there been significant change in water quality?

The first question is the more straight forward. If a sample value exceeds a standard, accounting for sampling and analytic variability, then a violation has occurred. In this situation a "violation" means only that a mandated concentration level has been exceeded, not that certain actions must be taken. The general idea is that a standard may be allowed a slight elevation due to laboratory error, before a defensible violation occurs. This problem is acute when standards are at or approach the level of detection of the contaminant, as is the case with some volatile organic compounds. Sampling error may be addressed by timely resampling of the entire site.

The second question is more complex, since now a comparison must be made between supposedly "clean" background data and possible contaminated data, both of which are subject to temporal and spatial variability as well as sampling and analytic error. Hence, the problem becomes one of statistical inference.

There are five methods recommended in the federal regulations for use in evaluating groundwater quality at landfills. Each of these tests have inherent advantages and disadvantages which render them more or less useful, depending on site characteristics.

B. Strategy

Two statistical methods recommended by the US EPA were chosen as appropriate for this site. They are the parametric analysis of variance for pH, chlorides, conductance, and the test of proportions for the metals and VOC's.

A parametric analysis of variance (ANOVA) followed by multiple comparison procedures to identify specific sources of difference, is the method preferred by the EPA. The procedures include estimation and testing of the contrasts between the mean of compliance data and background data at each downgradient well for each constituent. A 5% significance level was used.

Analysis-of-variance models are used to analyze the effects of an independent variable on a dependent variable. For groundwater monitoring data, the group of downgradient wells is the independent variable, and the aqueous concentration of pH, chlorides, and conductance are each individually a dependent variable. An analysis-of-variance can determine whether observed variations in aqueous concentrations are statistically significant. Use of analysis-of-variance models is appropriate in situations where background concentrations for the specific constituent can be determined.

The test of proportions was used for data with between 15% and 90% below the detection limit (BDL) data.

If more than 90% of the data is BDL, the Poisson distribution will be tested to determine if the values are significant. It's concept is similar to that of the test of proportions. The test of proportions is a method to determine whether a difference in proportion of detected values in the compliance data is statistically different from the proportion of detected values in the background data. If the proportion is statistically different, this is significant evidence of contamination. There must be results from four sampling events for the constituent of concern for this test to be applied to that constituent.

Both the new and old downgradient wells were statically evaluated. All of the data for each constituent at the three old downgradient wells for the first two years of operation were pooled to create background data for the indicator parameters. A landfill generally takes one year to generate leachate. Also, the first year's waste was placed more than 120 feet from the nearest downgradient well and the groundwater from under the trash, travelling at 10 feet per month, would take one year to reach the well. Therefore, the first year's data can be with reasonable assurance considered background data.

The upgradient bedrock water quality is not the same as the downgradient alluvium water. Therefore, the downgradient data was not compared to the upgradient data

APR 29 1992

for the indicator parameter to determine if a change in water chemistry has occurred.

Monitoring for VOC's and metals did not begin until three years after operations began. Therefore, no background data in the downgradient wells exists for these constituents. Unfortunately, the two correctly installed upgradient wells only have been sampled once for VOC's and metals. Though the water in the upgradient wells does not come from the same water bearing zone as the downgradient wells, it is suitable to use for a comparison of VOC's and metals. The data from the old upgradient wells are not likely reflective of groundwater quality due to the poor construction of the wells and the lack of purging. However, the variability of the VOC and metals data is reflective of the inherent variability of the sampling and the testing methods. The proportion of detectable concentrations in the stagnant water of the old upgradient wells was pooled with the available data from the new upgradient wells to develop a data set with which to compare the downgradient data.

C. Results

1. Indicators

All three indicator parameters are normally distributed and do not show seasonal affects. Therefore, the parametric ANOVA test was applicable.

The pH data shows little variability. In fact, the river, upgradient wells, and downgradient wells all maintain similar pH values. It is known, however, that all three are different water-bearing zones. The compliance data was not significantly different from the background data for pH.

The chlorides and conductance values in background and compliance data from both old and new downgradient wells are highly variable. The variability does not show a seasonal pattern. This variation in data means, for instance, that conductance at WMW3 went from 1,275 umhos/cm down to 378 umhos/cm between October, 1988 and January, 1989. An additional example of this variability occurred between the third and fourth quarter of 1989 where chlorides were measured at 208 and 10 mg/l respectively. Variability of this magnitude is not unusual in the data from the subject site. This variability is not an indication of contamination according to EPA guidance documents. Therefore, no significant indication of contamination was found. In addition, river water quality is not statistically different from the compliance well water quality.

2. Metals

Initially, ten SDWA metals were monitored; in

early 1990, copper and zinc were removed from the list for monitoring since they are not in the EPD's mandated list of metals. In addition, since copper and zinc have secondary MCL's based only on aesthetics and not on health affects, they were not considered critical parameters.

The number of possible detects for each metal is the number of wells times the number of sampling events. This yields a total of 43 possible detects for each metal.

Of the eight SDWA metals tested, selenium was never detected; therefore, no table is included for this metal. All of the other seven metals had at least one "detect" and are tabulated in Appendix 1.

Arsenic has been found only once in all of the monitoring conducted to date. It was detected in the most recent data set. Since the sample collected at that well only two months earlier was below detection limit, this is likely an error. It is not a significant indication of contamination. Its value will be confirmed with further testing.

Barium has regularly been found at low levels (0.1 mg/l) averaging about 10% of the SDWA MCL (1.0 mg/l). Low amounts of barium at the concentration found at the subject site are found in groundwater throughout Georgia. In addition, the amount of

barium in the river, upgradient wells, and downgradient wells are equivalent. Therefore, the presence of barium is not an indication of contamination.

The third quarter of 1988 detected several metals at low levels, which has not been substantiated by subsequent results. It is likely that this was due to a sampling or testing aberration. However, the data was included in the statistical evaluation.

The proportion of upgradient detects is not significantly different from the proportion of downgradient detects for cadmium, chromium, lead, mercury, and silver.

Therefore, none of the metals data indicate contamination.

3. VOC's

Of the 45 VOC's monitored, only 17 compounds were detected even once in the seven routine monitoring events when VOC's were checked. The 17 detected compounds are the only ones tabulated in Appendix 1. The frequency of VOC testing, times the number of wells times the number of VOC's equals a possible 1935 detections.

Upgradient wells detected VOC's 28 times, while VOC's were only found 14 times in downgradi-

ent wells.

Of the 7 VOC's with more than one detection, 6 were detected more often upgradient than downgradient. Therefore, for the 45 VOC's, 44 showed no significant difference between upgradient and downgradient. In addition, all of those 44 VOC's were detected at just above the detection limit, and therefore may be due to the variability inherent in sampling and testing and may not represent positive detection. None of these 44 VOC's were above action levels.

One VOC, chlorobenzene, was found statistically more often in the downgradient wells than the upgradient wells. Since the test-of-proportions statistic yielded a positive result, the values were checked and also found to be statistically verifiable as present above the detection limit. However, the average concentration of 40 ug/l is approximately 17 times lower than the action level of 700 ug/l. There is no Safe Drinking Water Act (SDWA) maximum contaminant level (MCL) for chlorobenzene. Furthermore, no other constituents confirm that groundwater impact has occurred.

Chlorobenzene is a synthetic organic compound used in industry. It is not readily soluble in water. It is used as a solvent for lacquers and

REFERENCES

1. Law Engineer, "Report on Groundwater Quality Monitoring Well Installation, Bolton Road Sanitary Landfill" January 21, 1991, Proj. No. 56300905.01.
2. Williams Russell & Johnson, Inc. "Construction Plans for Southern States Landfill, Inc." March, 1987.
3. Manual for Groundwater Monitoring" Georgia EPD April, 1988.
4. 40 CFR part 264, subpart F(53FR 39720: October 11, 1988. (regulations concerning groundwater evaluation)
5. Guidance document supporting the regulations is "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interm Final Guidance" USEPA, February, 1989 (PB89-151047).
6. Dr. Fred Pohand, Tribble & Richardson, Inc. Seminar, Fall 1990.
7. Plumb, R.H. 1991 "The Occurrence of Appendix IX Organic Constituents in Disposal Site Groundwater" Groundwater Monitoring Review pp 157-164.
8. Georgia Department of Natural Resources, Environmental Protection Division Water Supply Section, "Chemical Content of Finished Water Samples from Selected Public Systems in Georgia", February, 1980.

Georgia Department of Natural Resources

205 Butler Street, S.E., Floyd Towers East, Atlanta, Georgia 30334

~~Lanier C. Bennett~~, Commissioner
Harold F. Reheis, Assistant Director
Environmental Protection Division

January 3, 1991

MEMORANDUM

RECEIVED GRS

TO: Jim Dunbar

FROM: Barbara Howard ~~BH~~

JAN 7 1991

SUBJECT: Fulton Co. - Chambers of Georgia, Bolton Road
Municipal Solid Waste Landfill; Response to citizens'
questions about Site Permitting

1. The site lies between the Brevard Fault Zone.

EPD Response: The Chambers site is located in the geologic rock unit known as the Brevard Zone (sometimes referred to as the Brevard fault zone). The zone is comprised of sheared rocks that separate the northern and southern Piedmont. Late tectonic movement along the Brevard zone was around 230 million years before present; no other movement has been discerned. The Brevard zone is not associated with any seismic activity nor does it have any unique water bearing properties. The presence of the Brevard zone should have no effect on the proposed landfill.

2. The groundwater at the site cannot be adequately monitored because it is adjacent to the existing Southern States Municipal Solid Waste Landfill.

EPD Response: The site's groundwater monitoring plan was reviewed and approved by EPD. A registered geotechnical engineer supervised a site subsurface investigation and determined the site groundwater flow regime and up-gradient and down-gradient groundwater flow directions. This information is sufficient to establish pollutant concentration gradients and the most probable source of any observed pollutant concentration anomalies.

3. How can up-gradient and down-gradient be defined in a fractured bedrock environment?

EPD Response: See item 2 above. The site applicant conducted a second subsurface investigation from November 1989 to January 1990. Observation wells were drilled to the bedrock aquifer. Although the minimum required hydrogeological assessment of the uppermost aquifer is required, the applicant investigated the bedrock aquifer. The bedrock aquifer groundwater is contiguous to groundwater within the underlying fractured rock. Since the migrated pollutant concentration profile of the uppermost aquifer equals or exceeds the pollutant concentration profile of the bedrock aquifer whose concentration profile exceeds or equals that of groundwater within the fractured rock zone, characterization of the fractured rock zone is not required to define pollutant plume migration. Should pollutants migrate down to the fractured rock zone maximum pollutant concentration can be assessed. Given the probable physio-chemical pollutant characteristics required for a downward migration, such a plume would confine itself to the fractured rock zone and not pose any environmental effects on groundwater contiguous to the Chattahoochee River nor any neighboring well water.

4. Is the site located in a significant groundwater recharge area?

EPD Response: The site is not located in a Most Significant Groundwater Recharge Area, as mapped in the Georgia Geologic Survey's Hydrologic Atlas #18.

5. Site once contained a recreational lake.

EPD Response: Topographical data does not support any observation or statement that a recreational lake existed at the site.

6. Archaeological and historical investigation failed to reveal ancient Creek Indian Village.

EPD Response: Neither observation nor submitted data indicate that archaeological artifacts are present at the site.

7. Previous mining and filling activities at the site complicate the controlling of leachate.

EPD Response: The site Design and Operational Plan specifies the construction of a uniform liner subbase.

8. Fractured rock environment makes methane migration detection difficult if not impossible.

EPD Response: Methane gas will, if unimpeded, travel up dip in either fractured rock or soil strata or can act explosively if pressurized. Methane gas generated within the fill area should vent through the site venting system. However, if the gas permeates the synthetic liner, it would migrate through either the clay liner or soil subbase to the residuum soil. The residuum soil is to be monitored at the site periphery. Methane gas trapped within the site area would pose an onsite danger. However, any migrating gas should be detected before it crosses the site property line.

9. The three acre out parcel has not been properly zoned by the City of Atlanta.

EPD Response: The site plan as indicated on sheet 3 of the Design and Operational Plan corresponds to the property plat exhibit referenced in the Special Use Permit approved by the City of Atlanta on 12/29/87.

10. Chambers has not obtained a Section 404 Permit from EPA.

EPD Response: Sanitary landfill is not specified in the wetland areas designated in the plan. However, the applicant will be required to have any wetland areas designated by the Corps of Engineers and to obtain any necessary permits for construction activity in proximity to a wetland area prior to permit issuance.

Jim Dunbar
January 3, 1991
Page 3

11. Blasting has been called for at the site.

EPD Response: Blasting has not been specified in the site D & O Plan.

12. Why was Chambers of Georgia not found to be developing a landfill without a permit when they installed groundwater monitoring wells in December 1989.

EPD Response: Additional wells constructed for subsurface investigation are considered a part of site assessment for the development of a groundwater monitoring plan.

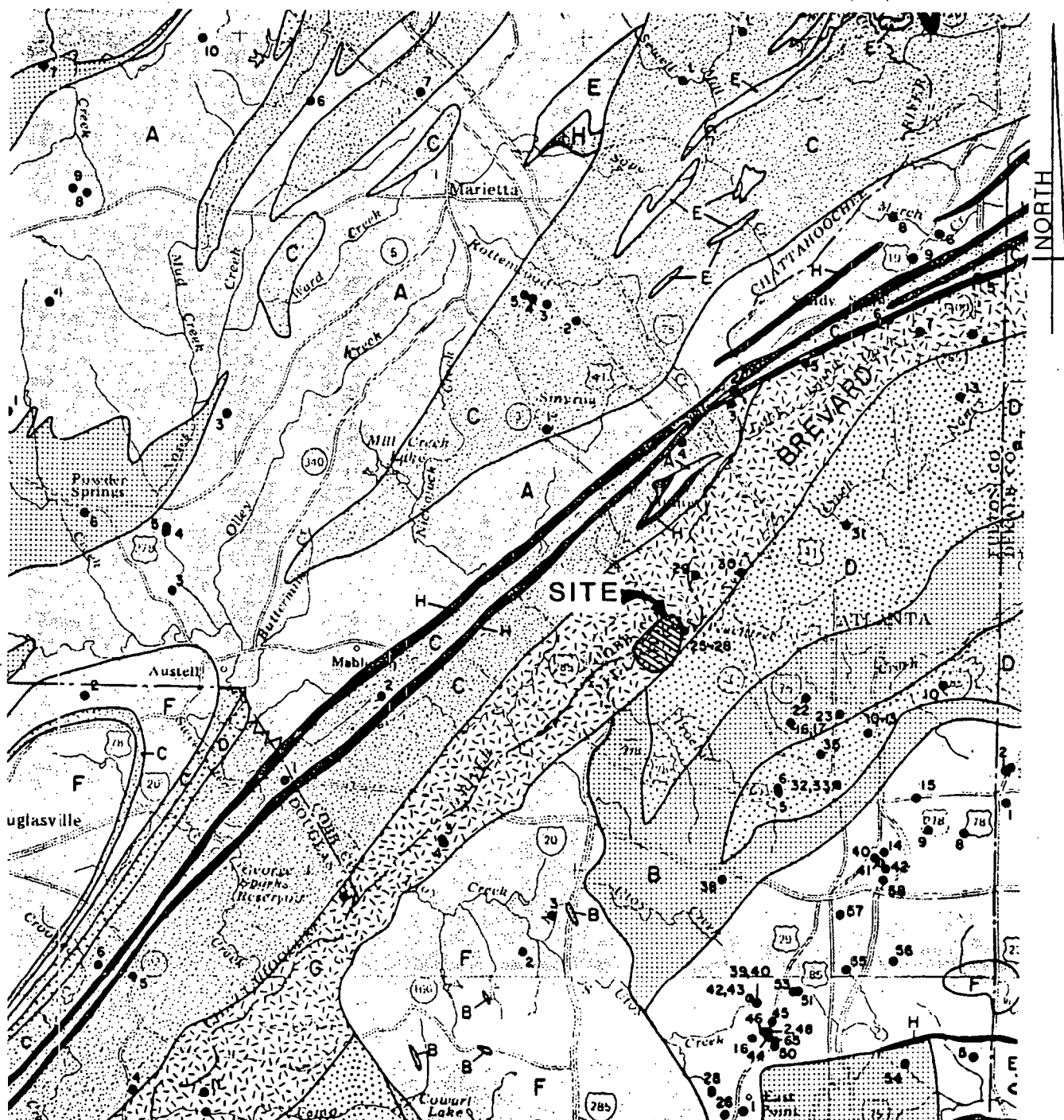
13. All liners leak.

EPD Response: With a maximum 1 meter head of fluid pressure on the liner, conservative leakage rates through both the synthetic and clay liner are .08 gals/acre/day. However the proposed liner design is projected to have only a .05 meter fluid head of pressure on the liner. The site has been assessed as having enough natural soil for subbase construction which can provide adsorptive attenuation of leachate leakage.

14. Leachate collection pipes will corrode and clog.

EPD Response: The leachate collection pipes have been oversized to accommodate any future clogging of the pipes due to biological growth. Because the pipes are nonmetal, corrosion of the pipes is not expected to occur.

BRH/dh
cc: Mark O. Smith



**WATER-BEARING UNITS AND LOCATION OF WELLS
IN THE VICINITY OF THE
PROPOSED CHAMBERS BOLTON ROAD SANITARY LANDFILL**

NOTE:
DESCRIPTION OF HYDROGEOLOGIC UNITS
ARE SHOWN IN TABLE 4 AND FIGURE 5

(FROM CRESSLER et al., 1983)



GEO SERVICES INC.

CONSULTING ENGINEERS

FIGURE NO. 6

PROJECT NO. P1312

DOCUMENT NO. N890873

PAGE NO.

March 13, 1992



LAW ENGINEERING

GEOTECHNICAL, ENVIRONMENTAL
& CONSTRUCTION MATERIALS
CONSULTANTS

James A. Leiper, P.E.
Sanifill, Inc.
6201 Powers Ferry Road, Suite 150
Atlanta, Georgia 30337

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GGG

APR 2 1992

SUBJECT: Response to EPD Comments
Sanifill/Southern States - Bolton Road Municipal Solid
Waste Landfill
Fulton County, Georgia
Law Engineering Project No. 57400905.02

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GGG
APR 29 1992

Dear Mr. Leiper:

We have received (by letter dated March 6, 1992) comments from the Georgia Environmental Protection Division (EPD) and the Georgia Geological Survey (GGG) regarding the Ground-Water Monitoring Plan for the subject facility. For clarity, we have presented each comment followed by our response.

Comment: The site hydrogeology has been inadequately addressed. Additional information on the fabric of the underlying bedrock is needed. This information should include, at a minimum, information on the foliation(s), joint patterns, and geologic contacts since these features can serve as preferential pathways for ground-water flow and would form the basis for the location and spacing of the monitoring wells.

Response: The 1968 USGS "Geologic Map of the Brevard Fault Zone near Atlanta, Georgia" indicates the site is underlain by button schists and alluvium. The contact between these two materials is illustrated in Figure 6 (Cross Section N - S) of our August 6, 1991 "Report of Hydrogeological Assessment." The USGS map also indicates the bedrock foliations are oriented at approximately N45° E and dip at 30 to 50 degrees south. Rock coring performed by LAW in September 1990 indicated the presence of intense fracturing along well developed dense foliations and open high angle joints. Because of the high degree of fracturing in the Brevard Zone, joints and foliations should intersect at close intervals. As a result ground-water flow directions should be influenced primarily by gravity and to a much lesser extent by foliations and joints.

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Sanifill, Inc.
March 13, 1992
Page 2 of 2

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GGS



APR 2 1992

Comment: Sample calculations of horizontal hydraulic conductivities should accompany the slug test data in Section IV.

The values of hydraulic conductivity were generated from the Slug Test data by computer. The computer program was based on the Bouwer and Rice method. We have attached copies of two technical papers which present the theory, the formulas, and some sample calculations.

Comment: Ground surface elevations at each borehole should be added to Table 2.

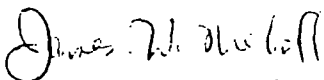
Response: Table 2 has been modified as requested.

We trust these responses will be acceptable to EPD and that approval of the Ground-Water Monitoring Plan will be forthcoming.

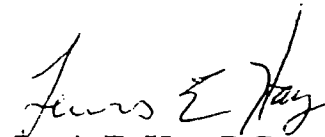
We have enjoyed assisting you and look forward to serving as your consultant on the remainder of this project and on future projects. If you have any questions, please contact us.

Very truly yours,

LAW ENGINEERING, INC.


James W. Niehoff, P.E.
Principal Engineer

0090502.com


Lewis E. Hay, P.G.
Principal Geologist

RECEIVED
GGS

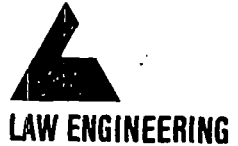
APR 2 1992

TABLE 2
SUMMARY OF GROUND-WATER DATA
BOLTON ROAD SANITARY LANDFILL
Fulton County, Georgia
Law Engineering Project No. 57400905.02

<u>Piezometer No.</u>	<u>Top of Casing Elevation(ft)</u>	<u>Ground Surface Elevation (ft)</u>	<u>Depth to Ground Water Level(ft)</u>		<u>Elevation of Ground Water Level(ft)</u>	
			<u>7/16/91</u>	<u>7/23/91</u>	<u>7/16/91</u>	<u>7/23/91</u>
B-1	+ 772.7	+772.1	22.62	23.26	+750.1	+749.4
B-2	+ 767.5	+766.9	15.85	15.64	+751.6	+751.9
B-3	+ 843.3	+841.5	24.87	24.45	+818.4	+818.8
GWA-1	+ 838.27	+836.16	50.73	47.91	+787.54	+790.36
GWA-2	+ 844.47	+842.0	26.12	N/R	+818.35	---
GWC-1	+ 762.43	+762.25	N/A	14.60	---	+747.83
GWC-2	+ 770.46	+768.11	21.23	20.91	+749.23	+749.55
GWC-3	+ 763.77	+761.60	17.23	16.55	+746.54	+747.22

NOTE: Ground water levels were measured from the top of casing.
N/A - Not Accessible
N/R - Not Recorded

August 6, 1991



GEOTECHNICAL, ENVIRONMENTAL
& CONSTRUCTION MATERIALS
CONSULTANTS

RECEIVED
GGG

APR 29 1992

Mr. Harold Gillespie
Tribble and Richardson, Inc.
4875 Riverside Drive
Macon, Georgia 31210

REC'D GGS
DEC 11 1991

Subject: Report of a Hydrogeological Study
Sanifill/Bolton Road Sanitary Landfill
Atlanta, Georgia
Law Engineering Project No. 57400905.02

Dear Mr. Gillespie:

Law Engineering, Inc. (LAW) is pleased to submit this report of our hydrogeological study for the subject site. These services were provided in general accordance with our proposal No. 574-91046, dated May 2, 1991. Authorization for our services was provided by Mr. Harold Gillespie of Tribble & Richardson, Inc. (T&R).

This report is intended for the exclusive use of Tribble & Richardson, Inc. and Sanifill, Inc. under the terms and conditions of our proposal. The contents of this report should not be relied upon by other parties without the express written consent of Law, Sanifill, and T&R. Reliance upon information contained in the report by any party acts as an agreement by that party to the same terms and conditions under which our services were provided. Furthermore, any use by a party for purposes beyond those intended by Law Engineering, Sanifill, or T&R will be at their sole risk. The findings are relevant to the dates of our services and should not be relied on to represent conditions at substantially later dates.

This report briefly discusses our understanding of the project, describes our exploratory procedures and presents our findings and recommendations. We have enjoyed assisting you thus far and look forward to serving as your consultant on the remainder of this project and on future projects.

If you have any questions please contact us.

Very truly yours,

LAW ENGINEERING, INC.

M. Whitt Walker (KES)

M. Whitt Walker, P.G.
Principal Geologist
Registered, Georgia 690

Lewis E. Hay

Lewis E. Hay, P.G.
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leh\0050902.rjl

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TABLE OF CONTENTS

PAGE

1.0 INTRODUCTION	4
2.0 PROJECT INFORMATION	5
3.0 GENERAL SITE DESCRIPTION	5
3.1 PHYSICAL SETTING	5
3.2 PROXIMITY TO MOST SIGNIFICANT GROUND-WATER RECHARGE AREAS	6
3.3 PROXIMITY TO PUBLIC AND PRIVATE WATER SUPPLY WELLS	6
4.0 SURFACE AND SUBSURFACE EXPLORATION	7
4.1 TOPOGRAPHY	7
4.2 BORING AND SAMPLING PROGRAM	7
4.3 DESCRIPTION OF SOIL AND ROCK	8
4.3.1 Regional Geology	8
4.3.2 Site Geology	9
4.4 DESCRIPTION OF UNCONFINED AQUIFER	9
4.5 DESCRIPTION OF CONFINED AQUIFER	11
4.6 GROUND-WATER POLLUTION POTENTIAL	11
5.0 RECOMMENDATIONS FOR GROUND-WATER MONITORING WELL LOCATIONS	12
6.0 BIBLIOGRAPHY	14



APPENDICES

SECTION I

- TABLE 1 - Summary of Physical and Chemical Properties
- TABLE 2 - Summary of Ground Water Data

SECTION II

- FIGURE 1 - SITE LOCATION MAP
- FIGURE 2 - SITE TOPOGRAPHIC MAP/BORING LOCATION PLAN
- FIGURE 3 - PROXIMITY OF SITE TO SIGNIFICANT GROUND-WATER RECHARGE AREAS
- FIGURE 4 - PROXIMITY OF SITE TO PUBLIC AND DOMESTIC WATER SUPPLIES
- FIGURE 5 - GENERALIZED WATER TABLE MAP
- FIGURE 6 - GENERALIZED CROSS SECTION N - S
- FIGURE 7 - GENERALIZED CROSS SECTION W - E
- FIGURE 8 - RECOMMENDED GROUND-WATER MONITORING WELL DETAIL

SECTION III

- KEY SHEET
- BORING LOGS
- PREVIOUS BORING LOGS

SECTION IV

- SIEVE ANALYSIS REPORTS
- FALLING HEAD PERMEABILITY TEST REPORTS
- WATER RETENTION TEST RESULTS
- CATION EXCHANGE CAPACITY TEST RESULTS
- SLUG TEST DOCUMENTATION RESULTS
- GROUND-WATER FLOW CALCULATIONS



1.0 INTRODUCTION

The purpose of this study was to evaluate the site's pertinent geologic and hydrogeologic characteristics in order to assist in the development of a ground-water monitoring plan. The monitoring plan is to include a monitoring well array in which each well is located and installed in a manner such that a leachate release from the landfill would be readily detected. To assist in the evaluation of the monitoring plan, geologic conditions and ground-water flow direction and velocities were assessed.

The study was conducted in accordance with the Georgia Environmental Protection Division "Manual for Groundwater Monitoring", issued in April, 1988. The work and test procedures utilized for this study consisted of: 1) a review of published geologic and hydrogeologic literature and maps; 2) a site reconnaissance; 3) a subsurface exploration program; 4) a public and private water well survey; and 5) selected chemical and physical laboratory analyses.

Numerous sources of published data were consulted in the preparation of this report. While in most cases not referenced at the point of use, the authors acknowledge that much of this report is based on the work of others. The outside sources of information consulted are listed in the bibliography.

In conjunction with this study, the site was visited by Whitt Walker, P.G. Georgia Registration No. 690 and Lewis Hay, P.G., Georgia Registration No. 600.



2.0 PROJECT INFORMATION

Sanifill, Inc. owns and operates a sanitary landfill on Bolton Road in the western section of Fulton County, Georgia. At the request of T&R, Law Engineering drilled five soil borings and installed five ground-water monitoring wells at the site in December 1990. These services are documented under our project No. 56300905.01 (report dated January 4, 1991). Prior to the installation of the new wells (1990), there were 5 wells (old wells) already in place at the site; however, these wells were installed several years ago under less stringent regulations and are not considered adequate for present monitoring needs. Sanifill has requested permission to abandon these five "old" wells. After completion of the new (1990) wells, an installation report was prepared for review by EPD. Although the installations were designed to replace the old wells, EPD has asked that supplemental hydrogeologic information be provided so that the ground-water monitoring system could be adequately assessed prior to abandoning the old wells.

3.0 GENERAL SITE DESCRIPTION

3.1 PHYSICAL SETTING

The site consists of an approximate 40-acre tract of land in a predominantly industrial area in west Fulton County, Georgia. As shown on the Site Location Map in Section II of the Appendix, the site is located on the Chattahoochee River just north of Bolton Road. Based on our review of the USGS Topographic Survey Maps for the area, the subject landfill was apparently constructed on the slope of ridge overlooking the Chattahoochee River. The coordinates of the site are:

Longitude: 84° 28' 00"
Latitude : 33° 49' 32"

Primary land use in the area is for industrial and commercial purposes with limited residential use. The Chattahoochee River is located north of the site. A concrete plant is located to the west. A railroad track, sewage treatment plant, water plant, and other industrial facilities are located to the east. The area south of the site is currently



undeveloped but is underlain by rubble fill (apparently the remnants of a large brick building). Other debris may also exist below the surface of this adjacent site. We understand the owners of the property plan to develop a sanitary landfill at that location. Land use along Bolton road (further south) is mixed commercial and residential.

3.2 PROXIMITY TO MOST SIGNIFICANT GROUND-WATER RECHARGE AREAS

A review of Hydrologic Atlas 18 indicates that the site is located over seven miles from a significant recharge area for drinking water supply aquifers. Figure 3 in Section II of the Appendix, depicts the approximate location of the site in relation to significant recharge areas.

3.3 PROXIMITY TO PUBLIC AND PRIVATE WATER SUPPLY WELLS

Our inventory of public and private water supply wells is based on discussions with representatives of the Cobb County Water Department, the Cobb-Marietta Water Authority, the City of Atlanta, the Fulton County Health Department, Fulton County Public Works and the U.S. Geological Survey.

Our inventory has identified the location of four drinking water supply wells within a two mile radius of the site. One of these wells has been confirmed as a private well. The remaining three wells are believed to be private wells based on casing size, reported capacities and ownership by private individuals. All of these wells are located over 1/2 mile from the site and appear to be located in separate hydrogeologic flow regimes. Four industrial water supply wells are located at the Sonoco Products facility east of the site. These wells have not been in use for several years. When used, they supplied water for an industrial process and were not used to supply drinking water. The surface water intake for the City of Atlanta water plant is located on the Chattahoochee River at Peachtree Creek approximately 0.6 miles northeast (upstream) of the site. The locations of the wells and the surface water intake are shown on Figure 4 (Proximity of Site to Public and Domestic Water Supplies) in Section II of the Appendix.



4.0 SURFACE AND SUBSURFACE EXPLORATION

4.1 TOPOGRAPHY

The site is located on the Atlanta Northwest - GA. 7.5 minute quadrangle map, dated 1968. Based on this map, site specific topographic survey data furnished by T&R and our observations, the site topography is consistent with Piedmont Areas.

Natural surface elevations at the site range from +840 feet, MSL on the south side sloping down to an elevation of +760 feet, MSL along the Chattahoochee river on the north side. The area is relatively well drained and drainage improvements have also been made.

4.2 BORING AND SAMPLING PROGRAM

In order to supplement the existing subsurface data and further explore the subsurface conditions in the area of the subject landfill, three soil test borings were drilled to depths of 30 to 40 feet each below the existing ground surface. The soil test boring locations are shown on the Site Topographic Map/Boring Location Plan in Section II of the Appendix. These locations were selected by our engineer and established in the field by a professional surveyor from T&R. Ground surface elevations at the boring locations were also established by the surveyor.

The Test Boring Records, in Section III of the Appendix, graphically show the penetration resistances and present the soil descriptions for each test boring. The stratification lines and depth designations on the boring records represent the approximate boundaries between soil types. In some instances, the transition between soil types may be gradual. The boring records from our previous study are also presented in Section III of the Appendix.

Piezometers were constructed in each borehole using one to two- inch diameter PVC pipe. As-built piezometer construction details are presented on the corresponding boring logs in Section III of the Appendix. The piezometers were constructed with sealed response zones. Water table data collected from the piezometers is presented on the Summary of Ground-



Water Data on Table 2 in Section I of the Appendix. Water table data from the Piezometers is also presented on the Generalized Water Table Map (Figure 5) in Section II of the Appendix.

In-situ horizontal hydraulic conductivity tests were conducted at piezometer locations B-1, B-2 and B-3. The test results were evaluated using the Bouwer & Rice method for unconfined partially penetrated aquifers. Slug Test Documentation Results are presented in Section IV of the Appendix.

The field exploration activities were observed by Lewis E. Hay, P.G. of Law Engineering, Inc. during the period of July 8 and 9, 1991. The test borings were drilled in general accordance with ASTM D-1586.

A falling head permeability test (Corps of Engineers Method EM 1110-2-1906) was conducted on two undisturbed soil samples from the borings to characterize the hydraulic conductivity in those materials. A grain size analysis was performed on five samples from the test borings to assist in selecting the filter sand gradation for the monitoring well design. Cation exchange capacity tests were performed on four selected soil samples to evaluate the ability of the soil to adsorb leachate ions. Water retention test were conducted on three soil samples in order to evaluate the effective porosity of the site soils. Laboratory test results are summarized on Table 1 in Section I of the Appendix. Specific test results are presented in Section IV.

4.3 DESCRIPTION OF SOIL AND ROCK

4.3.1 Regional Geology

The site is located in the Piedmont Physiographic Province within the Brevard Zone of Cataclasis (also referred to as the Brevard Zone or the Brevard Fault Zone) adjacent to the Chattahoochee River a short distance downstream of its confluence with Peachtree Creek. The Brevard Zone is a ductilely sheared zone of retrograde and cataclastic rocks believed to have been formed by movement on a major fault zone.



4.3.2 Site Geology

The site and adjacent areas are mapped as being underlain by button schists. This was confirmed by rock coring performed by LAW in 1990. Alluvium overlies the bedrock along the Chattahoochee River (e.g. in the vicinity of borings B-1 and B-2). The alluvium consists of silty to very silty sands and very sandy silts. Residuum formed by the in-situ weathering of the bedrock mantles the topographically higher areas of the site (e.g.: in the vicinity of Boring B-3). The residuum is typically a micaceous sandy silt grading downward into a partially weathered schist.

4.4 DESCRIPTION OF UNCONFINED AQUIFER

The site is located within the Piedmont Physiographic Province. Ground water within this geologic setting typically occurs under water-table conditions. In essence, surface water from rainfall, surface impoundments, and other sources, infiltrates downward through overburden materials to a saturated zone within the soil and shallow fractured rock mass. Water is stored and flows through pores in the soils and in joints and fractures in the rock mass. The shape of the water table is generally a subdued replica of the surface topography where major surface-water divides also tend to act as ground-water divides. Springs occur if the water table intersects the ground surface. This condition was not observed on the site at the time of our exploration.

The ground-water table encountered in the exploratory borings represents the water table for the unconfined ground-water system present at the site. The system is made up of a composite two-media system which characterizes the ground-water flow for the site. The mantle of alluvium and/or residual soil, soft weathered rock, and underlying fractured bedrock make up the two-media system. The overlying soil and soft weathered rock provide an intergranular medium through which recharge and discharge of ground-water from the fractured rocks, commonly discharges to streams. The Generalized Water-Table Map (Figure 5) in Section II of the Appendix illustrates the configuration of the unconfined ground-water system present at the time of our field services. The water-table



measurements used to develop the map were obtained on July 23, 1991 approximately two weeks after the last boring was drilled.

Direct rainfall is the principal source of recharge for the water table aquifer. As shown on the Generalized Water Table Map, ground-water flow at the site is towards the north. Ground-water discharge apparently occurs to the Chattahoochee River. The slope of the water table generally parallels the topographic slope. As Figure 5 in Section II of the Appendix illustrates, the hydraulic gradient at the site ranges from approximately 0.038 to 0.059 and averages approximately 0.044. Based on past and more recent data, ground-water level variations of up to 18 feet between highs and lows, appear to occur on portions of the site. The most significant variations were observed along the southeast side (5 to 18 feet) of the landfill site.

Physical and chemical tests were performed on the site soils in order to determine their pertinent hydrogeological characteristics. In-situ horizontal hydraulic conductivities (K) were determined at select depth intervals for piezometer locations B-1, B-2, and B-3. Slug test (K) values ranging from 4.3×10^{-5} cm/sec to 5.5×10^{-6} cm/sec were calculated using the slug test results.

Results of falling head permeability tests performed on undisturbed samples from B-2 indicated that these samples have hydraulic conductivities which range from 1.3×10^{-4} to 7.5×10^{-8} cm/sec.

Measured effective porosity values ranged between 10.1 and 26.6 percent. Values for effective porosity were obtained by subtracting the retained percent water at one atmosphere of pressure from the saturation percent water.

Effective porosities utilized in our flow velocity calculations were based on the laboratory test results. These values may not be representative of every location across the site. Based on the data collected, we estimate that the effective porosity of the site soils range from 10.1 to 26.6 percent with an average of 18.9 percent. Using the measured values of hydraulic conductivity and applying it to Darcy's Law (with the assumption of steady state laminar



flow), we calculated a maximum ground-water flow velocity of 0.22ft/d and an average velocity of 0.02 ft/d. Velocity equations and calculations are presented in Section IV of the Appendix.

Results of the cation exchange capacity (CEC) analyses indicated that the samples tested have low to moderate adsorption capabilities. Samples from B-1 exhibited a CEC of 28 to 14 meq/100g, B-2 exhibited a CEC of 8.3 meq/100g, B-3 exhibited a CEC of 12 meq/100g.

The results for most of the soil property tests are tabulated on Table 1 in Section I of the Appendix. Specific laboratory test results are presented in Section IV of the Appendix.

4.5 DESCRIPTION OF CONFINED AQUIFER

No confined aquifers are believed to exist at the site.

4.6 GROUND-WATER POLLUTION POTENTIAL

As mentioned in subsection 4.4, CEC test results indicate the soils tested have a low to moderately potential for adsorbing leachate ions. This is most likely the result of the mineralogy and low percentage of organics present in the soils. Low to moderate CEC values are generally considered negligible for design purposes. Also, attenuation of leachate through biodegradation should be assumed to be nil. Although micro organisms will typically establish communities at some point in the future, at this time we do not predict to what degree biodegradation might be effective as an attenuation mechanism. In addition, although chemical reactions involving the leachate, the ground water, and adjacent soils will occur, the impact and quantification of these reactions are not known at this time and need not be considered in the design of the ground-water monitoring system.



5.0 RECOMMENDATIONS FOR GROUND-WATER MONITORING WELL LOCATIONS

The following recommendations are based on the information and data obtained as part of this study. The discovery of any site subsurface condition which deviates from the data currently available for our evaluation should be reported to us so that our recommendations can be reviewed and, if necessary, modified.

Based on the data collected during our evaluation, it appears the direction of ground water flow at the landfill site is toward the north under a moderate to gentle gradient. We therefore recommend that a system of nine Type II ground water monitoring wells be installed to provide long-term monitoring of the ground water conditions at the landfill. Three wells should be located hydraulically up-gradient on the north side of the landfill and six should be located along its northern boundary. Four of the five existing wells at the landfill are considered acceptable for inclusion in the ground-water monitoring system. It will therefore be necessary to install five additional wells. GWA-1 and GWA-2 may be used for up-gradient monitoring. A third up-gradient well (GWA-2A) should be installed adjacent to GWA-2 to monitor the ground water above the soil/rock interface. GWC-2 and GWC-3 may be used for down-gradient monitoring. Because of reported excessive turbidity, we recommend GWC-1 be replaced. Four additional wells will therefore be needed along the northern landfill boundary.

The ground-water monitoring wells should be installed to a depth extending 10 feet into the water table. Wells should be constructed of 2-inch PVC flush-threaded pipe with the lower 15 feet consisting of 0.010 inch slotted screen. Each well pipe should be equipped with a base plug and locking access cap. No glues or cements should be used in the joining of well pipe materials.

The lower section of the well annulus should be filled (2 feet above the top of the well screen) with sand to serve as a filter pack. Filter pack material should consist of relatively clean, well rounded quartz sand with a D_{15} grain size between 0.3 and 1.0 mm and a uniformity coefficient of 2.5 or less. This particular sand pack would be compatible with

Tribble & Richardson, Inc.

August 6, 1991

Page 13 of 14



the grain sizes of the site formation materials existing within the screened intervals, and should also be compatible with the screen slot size.

A bentonite seal of at least 2 feet in thickness should be placed directly above the sand pack and should be activated prior to grout placement. A non-shrink grout should be placed in the remaining annular space. The well head exposed at the surface should be encased with a water tight, lockable well shield that is anchored into a 3-foot radius concrete pad with a thickness of at least 4 inches. A recommended Ground-Water Monitoring Well Detail is presented on Figure 8 in Section II of the Appendix.



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APPENDICES

TABLE 1
SUMMARY OF PHYSICAL AND CHEMICAL PROPERTIES
BOLTON ROAD SANITARY LANDFILL
Fulton County, Georgia
Law Engineering Project No. 57400905.02

CATION EXCHANGE CAPACITY (CEC)

<u>Boring No.</u>	<u>Depth (ft.)</u>	<u>Measured Value ($\frac{meq}{100\text{ gm}}$)</u>	<u>Expected Proximity to Fill</u>
B-1	9.0 - 10.5	28	Slightly clayey sandy SILT
B-1	14.0 - 15.5	14	Micaceous very sandy SILT
B-2	4.0 - 5.5	8.3	Micaceous slightly silty fine SAND
B-3	9.0 - 10.5	12	Sandy clayey SILT

WATER RETENTION TEST (Effective Porosity)

<u>Boring No.</u>	<u>Depth (ft.)</u>	<u>Measured Value (%)</u>	<u>Soil Type</u>
B-1	24.0 - 25.5	20.1	Micaceous very sandy SILT
B-2	9.0 - 10.5	26.6	Micaceous slightly silty fine SAND
B-2	19.0 - 20.5	10.1	Micaceous slightly clayey silty fine SAND

LABORATORY FALLING HEAD PERMEABILITY ANALYSIS (Hydraulic Conductivity)
UNDISTURBED SAMPLES - VERTICAL DIRECTION

<u>Boring No.</u>	<u>Depth (ft.)</u>	<u>Measured Value ($\frac{cm}{sec}$)</u>	<u>Soil Type</u>
B-2	12.0 - 14.0	1.3×10^{-4}	Micaceous very silty fine SAND
B-2	22.0 - 24.0	7.5×10^{-5}	Micaceous silty fine sand with some sand and silt seams

FIELD IN-SITU HYDRAULIC CONDUCTIVITY TESTS (Slug Tests) HORIZONTAL DIRECTION

<u>Boring No.</u>	<u>Test Interval (ft.)</u>	<u>Measured Value ($\frac{cm}{sec}$)</u>	<u>Test Type</u>	<u>Material Type</u>
B-1	25.0 - 40.5	5.5×10^{-6} 4.3×10^{-5}	Slug In Slug Out	Micaceous very sandy/ slightly silty fine to coarse sand and gravel
B-2	12.0 - 30.0	2.5×10^{-5} 1.3×10^{-5}	Slug In Slug Out	Micaceous very silty fine sand to micaceous slightly clayey silty fine sand
B-3	27.0 - 38.5	2.0×10^{-5} 6.1×10^{-6}	Slug In Slug Out	Partially weathered gray to brown schist

TABLE 2
SUMMARY OF GROUND-WATER DATA
BOLTON ROAD SANITARY LANDFILL
Fulton County, Georgia
Law Engineering Project No. 57400905.02

<u>Piezometer No.</u>	<u>Top of Casing Elevation (ft.)</u>	<u>Depth to Ground Water Level (ft.)</u>		<u>Elevation of Ground Water Level (ft.)</u>	
		<u>7/16/91</u>	<u>7/23/91</u>	<u>7/16/91</u>	<u>7/23/91</u>
B-1	+ 772.7	22.62	23.26	+ 750.1	+ 749.4
B-2	+ 767.5	15.85	15.64	+ 751.6	+ 751.9
B-3	+ 843.3	24.87	24.45	+ 818.4	+ 818.8
GWA-1	+ 838.27	50.73	47.91	+ 787.54	+ 790.36
GWA-2	+ 844.47	26.12	N/R	+ 818.35	---
GWC-1	+ 762.43	N/A	14.60	---	+ 747.83
GWC-2	+ 770.46	21.23	20.91	+ 749.23	+ 749.55
GWC-3	+ 763.77	17.23	16.55	+ 746.54	+ 747.22

NOTE: Ground water levels were measured from the top of casing.

N/A - Not Accessible

N/R - Not Recorded

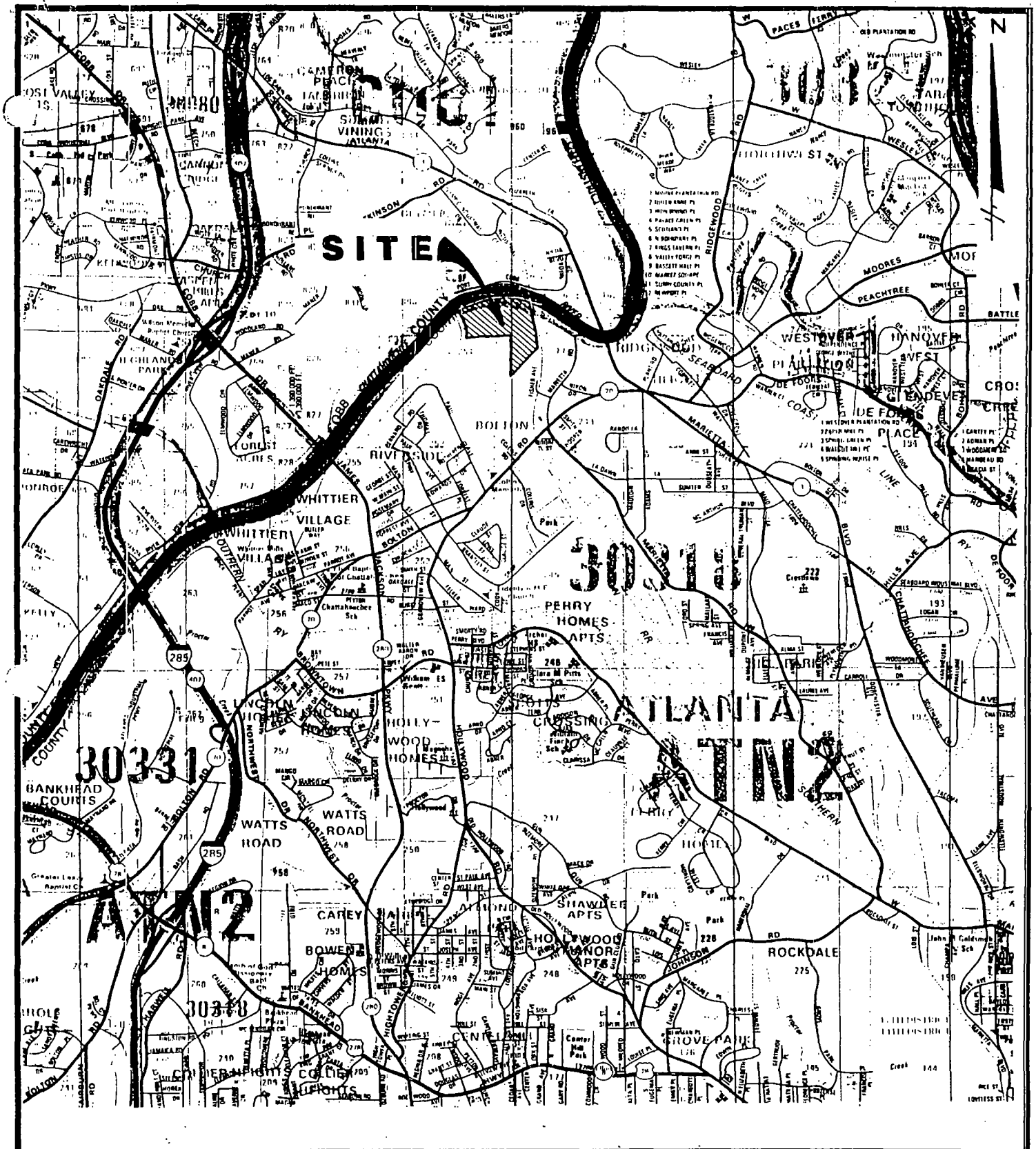


FIGURE 1 - SITE LOCATION MAP

BOLTON ROAD SANITARY LANDFILL
ATLANTA, GEORGIA



Law Engineering
Atlanta, Georgia

Geotechnical, Materials & Environmental Consultants

Project No.
57400905.02

Scale
N.T.S.

Date
AUG./1991

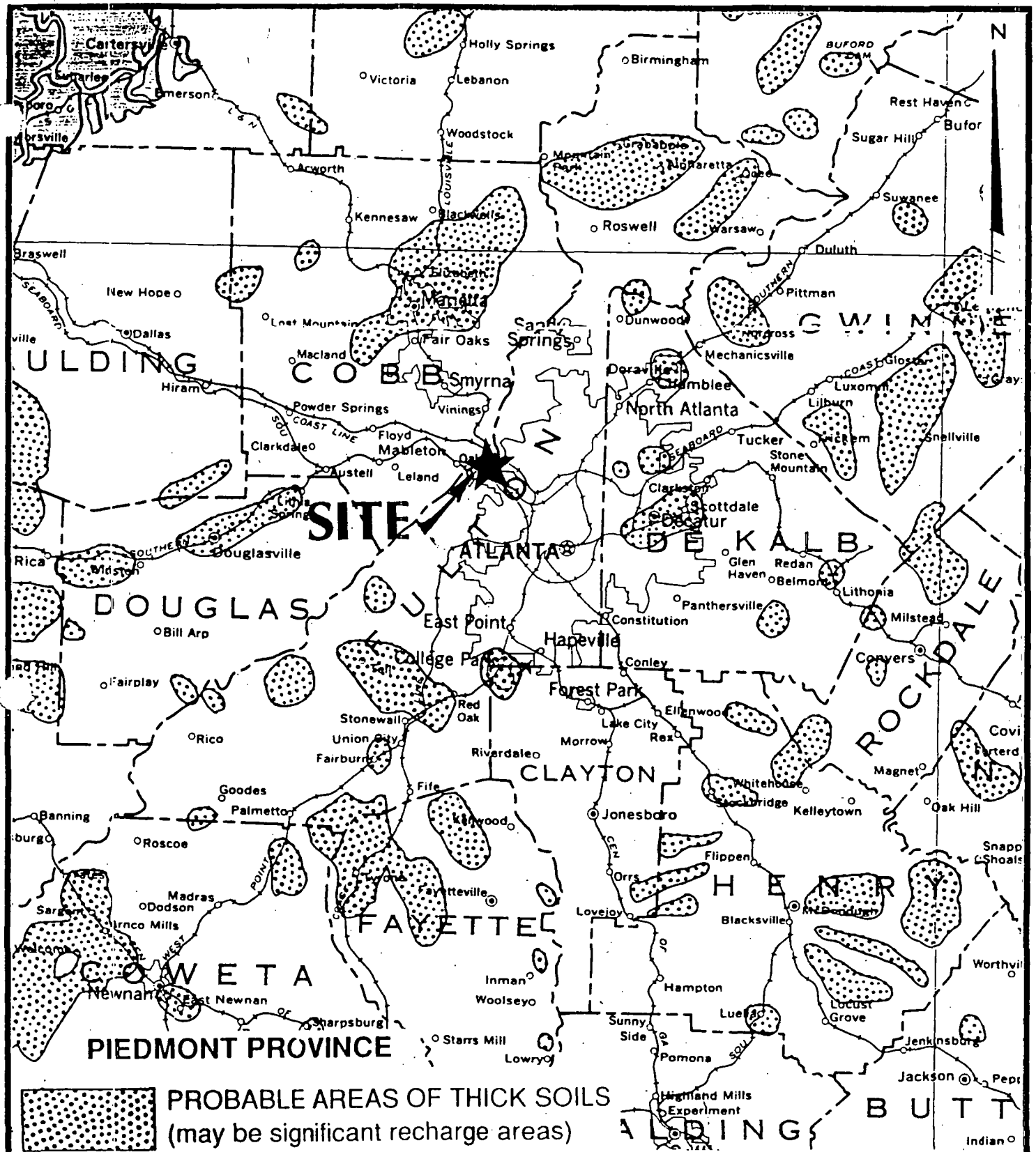


FIG. 3 - PROXIMITY OF SITE TO SIGNIFICANT GROUND-WATER RECHARGE AREAS

**BOLTON ROAD SANITARY LANDFILL
ATLANTA, GEORGIA**

Geotechnical, Materials & Environmental Consultants

Law Engineering
Atlanta, Georgia

Project No.
57400905.02

Scale
1 in. = 8 MI.

Date
AUG./1991



LEGEND

DRINKING WATER SUPPLY WELL

PRIVATE DRINKING WATER SUPPLY WELL

SURFACE WATER INTAKE CITY OF ATLANTA

FOUR INDUSTRIAL WATER SUPPLY WELLS



LAW ENGINEERING

Atlanta, Georgia

Geotechnical, Materials & Environmental Consultants

BOLTON ROAD SANITARY LANDFILL
ATLANTA, GEORGIA

SCALE

AUG./1991

PROJECT NO.

57400905.02

DATE

AUG./1991

FIGURE 4

**PROXIMITY OF SITE TO
PUBLIC AND DOMESTIC
WATER SUPPLIES**

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ.MI.)	7Q10 (CFS)	LEVEL OF SERVICE (%)
1-010(MSW)	City of Clarkesville MWS	Habersham	Clarkesville	Soque River	10.5		1.0	101	74.3	≥99*
1-020(MSD)	City of Clarkesville WPCP	Habersham	Clarkesville	Soque River	10.0	0.75		104	80.0	
1-030(MSW)	City of Cornelia MWS	Habersham	Cornelia	Camp Creek	3.5		2.8	1.9	1.3	≤60*
1-040(MGW)	City of Demorest MWS	Habersham	Demorest	Hazel Creek	3.2/S.0.5		0.35	N/A	N/A	
1-050(MSD)	City of Demorest WPCP	Habersham	Demorest	Hazel Creek	7.6	0.40		28.6	24.0	
1-060(MSD)	City of Cornelia WPCP	Habersham	Cornelia	S. Fork Mud Cr.	0.9	2.50		2.0	1.4	
1-070(MSD)	City of Baldwin WPCP	Habersham	Baldwin	S. Fork Mud Cr.	0.5	0.30		2.0	1.3	
1-080(MSD)	White Sulfur WPCP	Hall	Gainesville	Lake Lanier	379.1	0.10				
1-090(MSD)	Linwood Drive WPCP	Hall	Gainesville	Lake Lanier	371.4	3.0				
1-100(MSW)	City of Gainesville MWS	Hall	Gainesville	Lake Lanier	370.0		12.0	1040	630	≥99*
1-110(MSW)	City of Cleveland MWS	White	Cleveland	Turner Creek	0.5		0.4	8.3	4.2	≥99*
1-120(MSD)	City of Cleveland WPCP	White	Cleveland	Cox Creek	0.3	0.35		3.0	1.1	
1-125(MSW)	City of Dahlonega MWS	Lumpkin	Dahlonega	Yahoola Creek	5.0		1.25	23.0	18	≥99*
1-130(MSD)	City of Dahlonega WPCP	Lumpkin	Dahlonega	Yahoola Cr Trib	0.1	0.72		0.5	0.2	
1-140(IGW)	Deering Milliken, Inc	Hall	Gainesville	Flat Creek	5.3/S.0.2		0.21	N/A	N/A	
1-150(MSD)	Flat Creek WPCP	Hall	Gainesville	Flat Creek	6.4	7.0		3.5	0.8	
1-160(MSD)	City of Flowery Br WPCP	Hall	Flowery Br	Lake Lanier	354.2/E.4.0	0.2				
1-170(MSW)	City of Cumming MWS	Forsyth	Cumming	Lake Lanier	351.1/W.3.0		2.5	1040	630	≥99*
1-180(MSW)	Gwinnett Co Water & Sewage Auth., Lake Lanier Plant	Gwinnett	Lawrenceville	Lake Lanier	348.5		36.0	1040	630	≥99*
1-190(MSW)	City of Buford MWS	Hall	Buford	Lake Lanier	348.4		1.5	1040	630	≥99*

* Calculated without minimum streamflow requirement

CHATTAHOOCHEE RIVER WATER
AVAILABILITY AND USE REPORT



GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES IN HYDROLOGIC UNIT #1

FIGURE 5

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (CFS)	LEVEL OF SERVICE (%)
2-010(MCW)	City of Sugar Hill MWS	Gwinnett	Sugar Hill	Richland Creek	5.8/E.O.2		0.14	N/A	N/A	
2-015(ISW)	Bona Allen, Inc.	Gwinnett	Buford	Suwanee Creek	14.7		0.28	5.8	1.0	≥99*
2-020(ISD)	Bona Allen, Inc.	Gwinnett	Buford	Suwanee Creek	14.6	0.14		5.8	0.1	
2-030(MSD)	City of Buford Westside WPCP	Gwinnett	Buford	Suwanee Creek	7.9	0.25		3.23	0.54	
2-040(MSD)	City of Buford Southside WPCP	Gwinnett	Buford	Suwanee Creek	5.9	1.0		14.0		
2-050(MSW)	Gwinnett County Water Auth.	Gwinnett	Lawrenceville	Chat. River	338.0		12.0	1100	670	≥99*
2-060(MSW)	DeKalb County Water & Sewer Dept.	DeKalb	Decatur	Chat. River	325.5		96.0	1210	720	≥99*
2-070(MSD)	Crooked Creek WPCP	Gwinnett	Norcross	Crooked Creek	1.7	2.0				
2-080(MSD)	Johns Creek WPCP	Fulton	Roswell	Chat. River	324.0	4.0		1214	700	
2-090(MSD)	City of Cumming WPCP	Forsyth	Cumming	Big Creek	24.2	0.25		0.49	0.04	
2-095(MSW)	City of Roswell MWS	Fulton	Roswell	Big Creek	2.0		0.62	96.4	7.9	≥99*
2-100(ISW)	Horseshoe Bend Prop., Inc.	Fulton	Roswell	Chat. River	315.6		0.25	1250	760	≥99*
2-110(MSD)	Big Creek WPCP	Fulton	Roswell	Chat. River	315	6.0		1255	740	
2-120(MSW)	Cobb Co. Marietta Water Auth.	Cobb	Acworth	Chat. River	310		48	1390	810	≥99*
2-130(MSW)	City of Atlanta MWS	Fulton	Atlanta	Chat. River	299.6		160	1460	900	86-99
2-140(MSD)	Chattahoochee WPCP	Cobb	Smyrna	Chat. River	299.1	20		1461	781	
2-150(MSD)	R.M. Clayton WPCP	Fulton	Atlanta	Chat. River	298.8	120		1462	701	
2-160(ISW)	Ga. Power Plant McDonough	Cobb	Atlanta	Chat. River	298.6		394	1600	915	50-58
2-170(ISW)	Ga. Power Plant Atkinson	Cobb	Atlanta	Chat. River	298.6		432	1600	915	50-58
2-180(ISD)	Ga. Power Plant McDonough Atkinson	Cobb	Atlanta	Chat. River	298.0	818		1600	855	
2-190(MSD)	South Cobb WPCP	Cobb	Mableton	Chat. River	294.5	24		1650	943	
2-200(IGW)	Anaconda Aluminum Co.	Fulton	Atlanta	Chat. River	293.0		0.33	N/A	N/A	

* Calculated without minimum streamflow requirement

CHATTAHOOCHEE RIVER WATER
AVAILABILITY AND USE REPORT



GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES IN HYDROLOGIC UNIT #2

FIGURE 6

FACILITY I.D. NUMBER	FACILITY NAME	COUNTY	CITY	STREAM	RIVER MILE	PLANT DISCHARGE (MGD)	PERMITTED WITHDRAWAL (MGD)	DRAINAGE AREA (SQ. MI.)	7Q10 (CFS)	LEVEL OF SERVICE (%)
2-210(MSD)	Utoy Creek WPCP	Fulton	Atlanta	Chat. River	291.7	30		1680	981	
2-220(MSD)	Douglasville-North WPCP	Douglas	Douglasville	Gothards Creek	4.0	1.0		9.9		
2-230(ISW)	Sweetwater Paper Board	Cobb	Austell	Sweetwater Creek	16.2		0.20	150	9	≥99*
2-240(ISW)	Austell Box Board Company	Cobb	Austell	Sweetwater Creek	14.4		0.70	153	9	≥99*
2-250(ISD)	Austell Box Board Company	Cobb	Austell	Sweetwater Creek	14.0	0.18		153	9	
2-260(MSW)	City of East Point MWS	Douglas	East Point	Sweetwater Creek	1.0		11.5	246	15	≥99*
2-270(MSD)	Camp Creek WPCP	Fulton	College Park	Chat. River	283.5	15		1715	1090	
2-280(MSD)	Line Creek WPCP	Fulton	Fairburn	Line Creek	6.9	0.22		2.4		
2-290(MSD)	City of Union WPCP	Fulton	Union City	Deep Creek	8.0	0.25		1.0		

* Calculated without minimum streamflow requirement

CHATTAHOOCHEE RIVER WATER
AVAILABILITY AND USE REPORT



GEORGIA ENVIRONMENTAL
PROTECTION DIVISION

MAJOR FACILITIES IN HYDROLOGIC UNIT #2

FIGURE 6 CONT



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kate Jones

SITE NAME: River

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE River

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Handwritten signature

SITE NAME: Sediment Pond

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	7
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE: Sediment Pond

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kathy Jones
Kathy J. Bragg

SITE NAME: Blank

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	10
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE Blank

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill, Inc.

ATTENTION: Greg Orr

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 4-13-92

RELEASED BY:

Kathy Jones
Kathy J. Bragg

LOCATION: Bolton Road Landfill

ANALYSIS	UNITS	SETTLE POND	RIVER	BY	DATE RUN	METHOD
Arsenic	mg/l	<0.05	<0.05	MB	4-01	206.2
Barium	mg/l	<1.0	<1.0	MB	4-02	208.1
Cadmium	mg/l	<0.01	<0.01	MB	3-31	213.1
Chromium	mg/l	<0.05	<0.05	MB	4-07	218.1
Lead	mg/l	<0.05	<0.05	MB	3-30	239.1
Selenium	mg/l	<0.01	<0.01	MB	3-31	270.2
Silver	mg/l	<0.0002	<0.0002	ARL	4-01	272.1
Mercury	mg/l	<0.0002	<0.0002	ARL	4-05	245.1

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



SPECIALIZED ASSAYS
ENVIRONMENTAL

300 12th Avenue South
Nashville, Tennessee 37203

Sample	Accession	
SWA-1	92 833458	
Collection Date	Time	Received
06/23/92	00:00	06/24/92
Referring Client	Client ID	Reported
JOHN KUNISKIS		06/26/92

Test	Result	Units	Reference Limits
METALS (TOTAL)			
ARSENIC	<0.005	PPM	
BARIUM	0.016	PPM	
CADMIUM	<0.001	PPM	
CHROMIUM, TOTAL	<0.005	PPM	
LEAD	0.014	PPM	
MERCURY	<0.001	PPM	
SELENIUM	<0.005	PPM	
SILVER	<0.005	PPM	
CHLORIDE	11	PPM	

SANIFILL
ATT. JOHN KUNISKIS
6201 POWERS FERRY RD SUITE 150
ATLANTA GA 30339

Telephone: 404 953 0608

5203

TABLE 1
SANIFILL - BOLTON ROAD FACILITY
GROUNDWATER MONITORING
JUNE 1992

GROUNDWATER MONITORING DATA SUMMARY

SAMPLING POINT I.D.	DEPTH TO BOTTOM (TOC)	DEPTH TO WATER (TOC)	TEMP. (°F)	pH (standard)	SPEC. COND (mS/cm)	GALLONS PURGED	COMMENTS
GWA--1	101.00	37.20	72.0	6.08	395	23	Purged dry at 23 gallons
GWA--2	67.10	56.22	76.6	6.60	423	6	
GWC--2	23.67	17.35	73.6	6.14	586	1	Purged dry at 1 gallon
WMW--2	NA	58.92	76.7	6.60	485	3	Six inch diameter steel casing
GWC--3	24.90	19.44	66.8	6.75	1290	3	Much sand in purge and sample water
WMW--3	56.30	26.89	63.4	5.96	1305	60	Four inch diameter pvc casing
GWC--4	27.55	22.62	73.4	6.35	506	1.5	Purged dry at 1.5 gallons
WMW--4	43.10	29.48	65.5	6.49	1070	27	Four inch diameter pvc casing
WMW--5	44.00	27.50	73.3	6.35	635	33	Four inch diameter pvc casing
SWA--1	NA	NA	71.9	7.32	124	NA	50 feet upstream of RR bridge
SWA--2	NA	NA	NA	NA	NA	NA	Sample point dry

Notes: TOC - Top Of Casing measurement



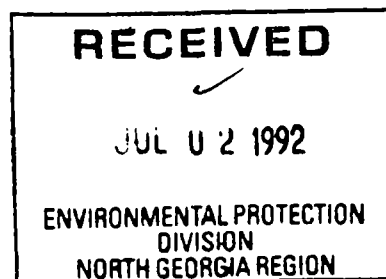
RECEIVED ^{mr/}

JUL 9 1992

LAND PROTECTION
COMPLIANCE PROGRAM

July 1, 1992

Mr. Michael J. Rodock
Environmental Specialist
Georgia Department of Natural Resources
Environmental Protection Division
North Georgia Regional Office
4244 International Parkway, Suite 114
Atlanta, Georgia 30354



Re: First Quarter Groundwater Monitoring Results
Sanifill, Inc. - Southern States Landfill
Permit No. 060-010D(SL)

Dear Mr. Rodock:

Enclosed is the first quarter analytical results for groundwater and surface water samples collected on March 23, 1992. The annual VOC samples were resampled on April 29, 1992 to confirm the original analysis, due to contamination detected in the blanks utilized for this sampling event.

The detected volatile organic parameters occurred in wells GWA-1, GWA-2, WMW-2; all are recognized upgradient monitoring wells. All downgradient wells were clean for VOCs. The sediment pond had one hit for carbon tetrachloride at 7 ug/l, but with a practical quantitation level of 5 ug/l this value could be considered negligible.

Upon reviewing the groundwater monitoring well construction details for GWA-1 and GWA-2, it was determined that the screen installed in these wells intersects the water table. It is recognized that there is a potential for landfill gas to enter these wells and condense on the well riser pipe. The condensation from the landfill gas may in all likelihood contain small amounts of VOCs. Thus, there is a distinct possibility that the VOCs detected in these wells are not present in the groundwater, but introduced to the well extraneously.

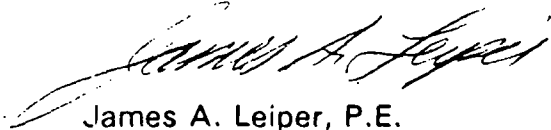
As you may know, we have a proposal which was submitted to the EPD to obtain approval for a revised groundwater monitoring system. Upon receiving approval for specific well locations we would like to abandon the existing wells which have screens intersecting the water table and reconstruct wells in approved locations such

that there is limited possibility for gas intrusion into the screened section of the well or riser pipe.

It would be appreciated if you would convey the EPD's position on this proposal or if the EPD feels other action is appropriate, we would be happy to discuss this situation further.

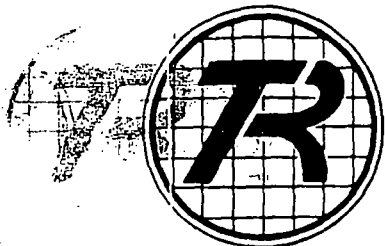
I look forward to receiving your thoughts on this issue. If you wish to contact me, please feel free to reach me at (404) 953-0608.

Sincerely,

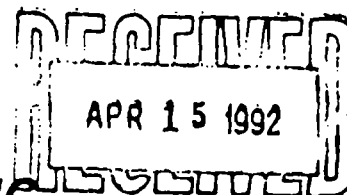
A handwritten signature in cursive script, reading "James A. Leiper".

James A. Leiper, P.E.
Regional Engineer

cc: Gerald Stelly
Earl Mikolitch
Chuck Williams



TRIBBLE & RICHARDSON INC.



CLIENT: Sanifill, Inc.

ATTENTION: Greg Orr

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 4-13-92

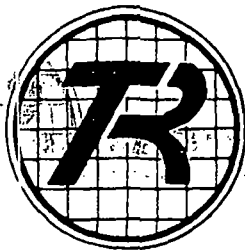
RELEASED BY: *Kathy Jones*
Kathy L. Bragg

LOCATION: Bolton Road Landfill

ANALYSIS	UNITS	BLANK	GWA 1	BY	DATE RUN	METHOD
Arsenic	mg/l	<0.05	<0.05	MB	4-01	206.2
Barium	mg/l	<1.0	<1.0	MB	4-02	208.1
Cadmium	mg/l	<0.01	<0.01	MB	3-31	213.1
Chromium	mg/l	<0.05	<0.05	MB	4-07	218.1
Lead	mg/l	<0.05	<0.05	MB	3-30	239.1
Selenium	mg/l	<0.01	<0.01	MB	3-31	270.2
Silver	mg/l	<0.0002	<0.0002	ARL	4-01	272.1
Mercury	mg/l	<0.0002	<0.0002	ARL	4-05	245.1

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill, Inc.

ATTENTION: Greg Orr

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 4-13-92

RELEASED BY:

Kathy T. Bragg

LOCATION: Bolton Road Landfill

ANALYSIS	UNITS	GWA 2	GWC 2	BY	DATE RUN	METHOD
Arsenic	mg/l	<0.05	<0.05	MB	4-01	206.2
Barium	mg/l	<1.0	<1.0	MB	4-02	208.1
Cadmium	mg/l	<0.01	<0.01	MB	3-31	213.1
Chromium	mg/l	<0.05	<0.05	MB	4-07	218.1
Lead	mg/l	<0.05	<0.05	MB	3-30	239.1
Selenium	mg/l	<0.01	<0.01	MB	3-31	270.2
Silver	mg/l	<0.0002	<0.0002	ARL	4-01	272.1
Mercury	mg/l	<0.0002	<0.0002	ARL	4-05	245.1

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill, Inc.

ATTENTION: Greg Orr

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 4-13-92

RELEASED BY:

Kathy S. Bragg

LOCATION: Bolton Road Landfill

ANALYSIS	UNITS	GWC 3	GWC 4	BY	DATE RUN	METHOD
Arsenic	mg/l	<0.05	<0.05	MB	4-01	206.2
Barium	mg/l	<1.0	<1.0	MB	4-02	208.1
Cadmium	mg/l	<0.01	<0.01	MB	3-31	213.1
Chromium	mg/l	<0.05	<0.05	MB	4-07	218.1
Lead	mg/l	<0.05	<0.05	MB	3-30	239.1
Selenium	mg/l	<0.01	<0.01	MB	3-31	270.2
Silver	mg/l	<0.0002	<0.0002	ARL	4-01	272.1
Mercury	mg/l	<0.0002	<0.0002	ARL	4-05	245.1

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill, Inc.

ATTENTION: Greg Orr

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 4-13-92

RELEASED BY:

Kathy S. Bragg

LOCATION: Bolton Road Landfill

ANALYSIS	UNITS	WMW 2	WMW 3	BY	DATE RUN	METHOD
Arsenic	mg/l	<0.05	<0.05	MB	4-01	206.2
Barium	mg/l	<1.0	<1.0	MB	4-02	208.1
Cadmium	mg/l	<0.01	<0.01	MB	3-31	213.1
Chromium	mg/l	<0.05	<0.05	MB	4-07	218.1
Lead	mg/l	<0.05	<0.05	MB	3-30	239.1
Selenium	mg/l	<0.01	<0.01	MB	3-31	270.2
Silver	mg/l	<0.0002	<0.0002	ARL	4-01	272.1
Mercury	mg/l	<0.0002	<0.0002	ARL	4-05	245.1

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill, Inc.

ATTENTION: Greg Orr

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 4-13-92

RELEASED BY:

Kathy S. Bugg

LOCATION: Bolton Road Landfill

ANALYSIS	UNITS	WMW 4	WMW 5	BY	DATE RUN	METHOD
Arsenic	mg/l	<0.05	<0.05	MB	4-01	206.2
Barium	mg/l	<1.0	<1.0	MB	4-02	208.1
Cadmium	mg/l	<0.01	<0.01	MB	3-31	213.1
Chromium	mg/l	<0.05	<0.05	MB	4-07	218.1
Lead	mg/l	<0.05	<0.05	MB	3-30	239.1
Selenium	mg/l	<0.01	<0.01	MB	3-31	270.2
Silver	mg/l	<0.0002	<0.0002	ARL	4-01	272.1
Mercury	mg/l	<0.0002	<0.0002	ARL	4-05	245.1

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill, Inc.

ATTENTION: Greg Orr

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 4-13-92

RELEASED BY: *Kathy Jones*
Kathy J. Bragg

LOCATION: Bolton Road Landfill

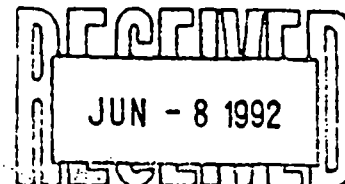
ANALYSIS	UNITS	SETTLE POND	RIVER	BY	DATE RUN	METHOD
Arsenic	mg/l	<0.05	<0.05	MB	4-01	206.2
Barium	mg/l	<1.0	<1.0	MB	4-02	208.1
Cadmium	mg/l	<0.01	<0.01	MB	3-31	213.1
Chromium	mg/l	<0.05	<0.05	MB	4-07	218.1
Lead	mg/l	<0.05	<0.05	MB	3-30	239.1
Selenium	mg/l	<0.01	<0.01	MB	3-31	270.2
Silver	mg/l	<0.0002	<0.0002	ARL	4-01	272.1
Mercury	mg/l	<0.0002	<0.0002	ARL	4-05	245.1

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.



CLIENT: Sanifill
DATE COLLECTED: 4-29-92
DATE RECEIVED: 4-29-92
DATE REPORTED: 6-04-92
SITE NAME: BLANK

ATTENTION: Jim Leiper
BY: T&R
BY: T&R
RELEASED BY: *Handwritten signature*

VOLATILE ORGANICS ANALYSIS DATA (METHOD 524)

ANALYSIS	RESULT (ug/l)
Benzene	<.5
Bromodichloromethane	<.5
Bromoform	<.5
Bromomethane	<.5
Carbon tetrachloride	<.5
Chlorobenzene	<.5
Chloroethane	<.5
Chloroform	<.5
Chloromethane	<.5
Dibromochloromethane	<.5
1,1-Dichloroethane	<.5
1,2-Dichloroethane	<.5
1,1-Dichloroethene	<.5
cis-1,2-Dichloroethene	<.5
trans-1,2-Dichloroethene	<.5
1,2-Dichloropropane	<.5
cis-1,3-Dichloropropene	<.5
trans-1,3-Dichloropropene	<.5
Ethylbenzene	<.5
Methylene Chloride	<5.0
Styrene	<.5
1,1,2,2-Tetrachloroethane	<.5
Tetrachloroethene	<.5
Toluene	<1.0
1,1,1-Trichloroethane	<.5
1,1,2-Trichloroethane	<.5
Trichloroethene	<.5
Vinyl chloride	<.5
O-Xylene	<.5
M-Xylene	<.5
P-Xylene	<.5
2-Chloroethylvinyl Ether	<.5

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kathy Jones
Kathy S. Bragg

SITE NAME: Blank

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	10
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE Blank

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill
DATE COLLECTED: 4-29-92
DATE RECEIVED: 4-29-92
DATE REPORTED: 6-04-92
SITE NAME: GWA 1

ATTENTION: Jim Leiper
BY: T&R
BY: T&R
RELEASED BY: *Kath Jones*

VOLATILE ORGANICS ANALYSIS DATA (METHOD 524)

ANALYSIS	RESULT (ug/l)
Benzene	<.5
Bromodichloromethane	<.5
Bromoform	<.5
Bromomethane	<.5
Carbon tetrachloride	<.5
Chlorobenzene	<.5
Chloroethane	<.5
Chloroform	<.5
Chloromethane	<.5
Dibromochloromethane	<.5
1,1-Dichloroethane	40.4
1,2-Dichloroethane	<.5
1,1-Dichloroethene	<.5
cis-1,2-Dichloroethene	<.5
trans-1,2-Dichloroethene	<.5
1,2-Dichloropropane	<.5
cis-1,3-Dichloropropene	<.5
trans-1,3-Dichloropropene	<.5
Ethylbenzene	<.5
Methylene Chloride	186
Styrene	<.5
1,1,2,2-Tetrachloroethane	<.5
Tetrachloroethene	1.6
Toluene	<1.0
1,1,1-Trichloroethane	99.6
1,1,2-Trichloroethane	<.5
Trichloroethene	3.3
Vinyl chloride	<.5
O-Xylene	<.5
M-Xylene	<.5
P-Xylene	<.5
2-Chloroethylvinyl Ether	<.5

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kathy S. Brogg

SITE NAME: GWA 1

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	120
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	450
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE GWA 1

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	230
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	7
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill
DATE COLLECTED: 4-29-92
DATE RECEIVED: 4-29-92
DATE REPORTED: 6-04-92
SITE NAME: GWA 2

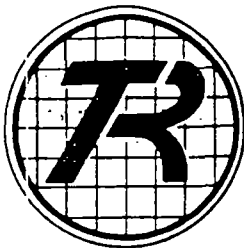
ATTENTION: Jim Leiper
BY: T&R
BY: T&R
RELEASED BY: *Kate Jones*

VOLATILE ORGANICS ANALYSIS DATA (METHOD 524)

ANALYSIS	RESULT (ug/l)
Benzene	2.2
Bromodichloromethane	<.5
Bromoform	<.5
Bromomethane	<.5
Carbon tetrachloride	<.5
Chlorobenzene	1.1
Chloroethane	<.5
Chloroform	<.5
Chloromethane	<.5
Dibromochloromethane	<.5
1,1-Dichloroethane	<.5
1,2-Dichloroethane	<.5
1,1-Dichloroethene	<.5
cis-1,2-Dichloroethene	26
trans-1,2-Dichloroethene	<.5
1,2-Dichloropropane	<.5
cis-1,3-Dichloropropene	<.5
trans-1,3-Dichloropropene	<.5
Ethylbenzene	<.5
Methylene Chloride	66
Styrene	<.5
1,1,2,2-Tetrachloroethane	<.5
Tetrachloroethene	2.4
Toluene	<1.0
1,1,1-Trichloroethane	29.8
1,1,2-Trichloroethane	<.5
Trichloroethene	5.9
Vinyl chloride	<.5
O-Xylene	.8
M-Xylene	<.5
P-Xylene	<.5
2-Chloroethylvinyl Ether	<.5

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kathy A. Briggs

SITE NAME: GWA 2

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	10	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	35
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE GWA 2

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	15
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	19
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill
DATE COLLECTED: 4-29-92
DATE RECEIVED: 4-29-92
DATE REPORTED: 6-04-92
SITE NAME: GWC 2

ATTENTION: Jim Leiper

BY: T&R

BY: T&R

RELEASED BY: Kath Jones

VOLATILE ORGANICS ANALYSIS DATA (METHOD 524)

ANALYSIS	RESULT (ug/l)
Benzene	<.5
Bromodichloromethane	<.5
Bromoform	<.5
Bromomethane	<.5
Carbon tetrachloride	<.5
Chlorobenzene	<.5
Chloroethane	<.5
Chloroform	<.5
Chloromethane	<.5
Dibromochloromethane	<.5
1,1-Dichloroethane	<.5
1,2-Dichloroethane	<.5
1,1-Dichloroethene	<.5
cis-1,2-Dichloroethene	<.5
trans-1,2-Dichloroethene	<.5
1,2-Dichloropropane	<.5
cis-1,3-Dichloropropene	<.5
trans-1,3-Dichloropropene	<.5
Ethylbenzene	<.5
Methylene Chloride	<5.0
Styrene	<.5
1,1,2,2-Tetrachloroethane	<.5
Tetrachloroethene	<.5
Toluene	<1.0
1,1,1-Trichloroethane	<.5
1,1,2-Trichloroethane	<.5
Trichloroethene	<.5
Vinyl chloride	<.5
O-Xylene	<.5
M-Xylene	<.5
P-Xylene	<.5
2-Chloroethylvinyl Ether	<.5

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kathy Jones
Kathy L. Briggs

SITE NAME: GWC 2

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	15
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE GWC 2

WMC

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Karl Jones

SITE NAME: GWC 3

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

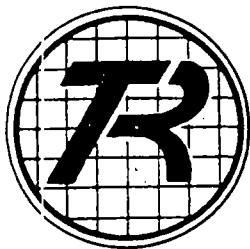
	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE GWC 3

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kathie Jones

SITE NAME: GWC 4

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE GWC 4

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill
DATE COLLECTED: 4-29-92
DATE RECEIVED: 4-29-92
DATE REPORTED: 6-04-92
SITE NAME: WMW 2

ATTENTION: Jim Leiper
BY: T&R
BY: T&R
RELEASED BY: *Kath Jones*

VOLATILE ORGANICS ANALYSIS DATA (METHOD 524)

ANALYSIS	RESULT (ug/l)
Benzene	.50
Bromodichloromethane	<.5
Bromoform	<.5
Bromomethane	<.5
Carbon tetrachloride	<.5
Chlorobenzene	<.5
Chloroethane	<.5
Chloroform	<.5
Chloromethane	<.5
Dibromochloromethane	<.5
1,1-Dichloroethane	18.9
1,2-Dichloroethane	<.5
1,1-Dichloroethene	.50
cis-1,2-Dichloroethene	5.70
trans-1,2-Dichloroethene	<.5
1,2-Dichloropropane	<.5
cis-1,3-Dichloropropene	<.5
trans-1,3-Dichloropropene	<.5
Ethylbenzene	<.5
Methylene Chloride	32.2
Styrene	<.5
1,1,2,2-Tetrachloroethane	<.5
Tetrachloroethene	1.4
Toluene	<1.0
1,1,1-Trichloroethane	5.0
1,1,2-Trichloroethane	<.5
Trichloroethene	1.50
Vinyl chloride	<.5
O-Xylene	<.5
M-Xylene	<.5
P-Xylene	<.5
2-Chloroethylvinyl Ether	<.5

ALL ANALYSIS PERFORMED ACCORDING TO EPA METHODOLOGY

COMMENT:



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kathy J. Brazy

SITE NAME: WMW 2

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	13
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE WMW 2

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kathy Jones

SITE NAME: WMW 3

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 83-53-92 16

SITE WTW 3

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kathy Jones

SITE NAME: WMW 4

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO
SAMPLE COLLECTED: 3-23-92
SITE WMW 4

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kade Jones

SITE NAME: WMW 5

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,1,2-Tetrachloroethane	5	ND

PAGE TWO
SAMPLE COLLECTED: 3-23-92
SITE WMW 5

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Wade Jones

SITE NAME: Sediment Pond

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	7
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE: Sediment Pond

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND



TRIBBLE & RICHARDSON INC.

CLIENT: Sanifill

ATTENTION: Jim Leiper

DATE COLLECTED: 3-23-92

BY: T&R

DATE RECEIVED: 3-23-92

BY: T&R

DATE REPORTED: 3-31-92

RELEASED BY:

Kate Jones

SITE NAME: River

VOLATILE ORGANIC ANALYSIS DATA (METHOD 8260)

	PQL (ug/L)	RESULT (ug/L)
Acetone	100	ND
Acrolein	50	ND
Acrylonitrile	50	ND
Benzene	5	ND
Bromodichloromethane	5	ND
Bromoform	5	ND
Bromomethane	10	ND
2-Butanone	100	ND
Carbon Disulfide	5	ND
Carbon Tetrachloride	5	ND
Chlorobenzene	5	ND
Chlorodibromomethane	5	ND
Chloroethane	10	ND
2-Chloroethylvinyl Ether	10	ND
Chloroform	5	ND
Chloromethane	10	ND
Dibromochloromethane	5	ND
1,4-Dichloro-2-Butane	5	ND
Dichlorodifluoromethane	5	ND
1,1-Dichloroethane	5	ND
1,2-Dichloroethane	5	ND
1,1-Dichloroethene	5	ND
Trans-1,2-Dichloroethene	5	ND
1,2-Dichloropropane	5	ND
cis-1,3-Dichloropropene	5	ND
trans-1,3-Dichloropropene	5	ND
Ethanol	200	ND
Ethylbenzene	5	ND
Ethyl Methacrylate	5	ND
2-Hexanone	50	ND
Iodomethane	5	ND
Methylene Chloride	5	ND
4-Methyl-2-Pentanone	50	ND
Styrene	5	ND
1,1,2,2-Tetrachloroethane	5	ND

PAGE TWO

SAMPLE COLLECTED: 3-23-92

SITE River

Tetrachloroethene	5	ND
Toluene	5	ND
1,1,1-Trichloroethane	5	ND
1,1,2-Trichloroethane	5	ND
Trichloroethene	5	ND
Trichlorofluoromethane	5	ND
1,2,3-Trichloropropane	5	ND
Vinyl Acetate	50	ND
Vinyl Chloride	10	ND
Xylenes (Total)	5	ND

Solid Waste Management Program-EPD
3420 Norman Berry Drive - 7th Floor
Hapeville, Georgia 30354
404-656-2836

WATER MONITORING REPORT
SOLID WASTE DISPOSAL SITES

DATE REPORTED 4-06-92

ATTENTION _____

Site Name: Sanifill - Bolton Road Site

Type Sample: ☐ Background ☒ Operational

☐ Other _____

Monitoring Results

Sampling Date 3-23-92

Monitoring Station #				Depth to Groundwater -wells only- (ft.)	Physical Condition of Monitoring Station (Describe)
	pH	Specific Conductance (umhos)	Chlorides (mg/l)		
Blank	6.68	6.7	<1.0	--	
GWA 1	5.29	520	6.10	30.7	good shape, clear, no odor
GWA 2	5.48	550	12.7	53.5	good shape, cloudy, no odor
WMW 2	6.00	540	6.0	56.4	good shape, cloudy, no odor
WMW 3	5.68	800	68.6	21.2	good shape, cloudy, no odor
WMW 4	5.95	560	56.5	24.2	good shape, cloudy, no odor
WMW 5	5.86	680	26.5	23.6	good shape, clear, no odor
GWC 3	6.25	990	66.0	16.3	good shape, cloudy, no odor
GWC 4	5.57	650	10.5	20.7	good shape, cloudy, no odor
GWC 2	5.95	670	28.0	13.6	good shape, muddy, no odor
Settle P.	6.78	510	11.1	--	
River	6.74	73	3.8	--	

Laboratory Tribble and Richardson, Inc. Chemist Kathy Jones Telephone # 912-474-6100

Solid Waste Management Program - EPD
4244 International Parkway
Suite 100
Atlanta, Georgia 30354

WATER MONITORING REPORT
SOLID WASTE DISPOSAL SITES

DATE REPORTED 5-05-92

ATTENTION Jim Leiper

Site Name: Southern States - Bolton Road Landfill 060-010-D (SL)

Type Sample: ☐ Background

☒ Operational

☐ Other _____

Monitoring Results

Sampling Date 4-29-92

Monitoring Station #				Depth to Groundwater -wells only- (ft.)	Physical Condition of Monitoring Station (Describe)
	pH	Specific Conductance (umhos)	Chlorides (mg/l)		
BLANK	7.13	11.7	<1	N/A	
RIVER	6.61	84	10	N/A	
SED. POND	--	--	--	N/A	DRY
GWA 1	6.63	1550	9	37.4	
GWA 2	6.18	600	12	55.3	
GWC 2	6.12	730	20	22.5	
GWC 3	6.10	170	51	18.2	
GWC 4	6.09	700	8	27.7	
WMW 2	6.23	650	11	57.4	
WMW 3	6.60	900	109	24.8	
WMW 4	6.22	700	24	42.0	
WMW 5	6.23	800	19	43.0	

Laboratory Tribble and Richardson, Inc.

Chemist *Kathy Spencer*

Telephone # (912) 474-6100